AMERICAN FORESTS

NOVEMBER 1942

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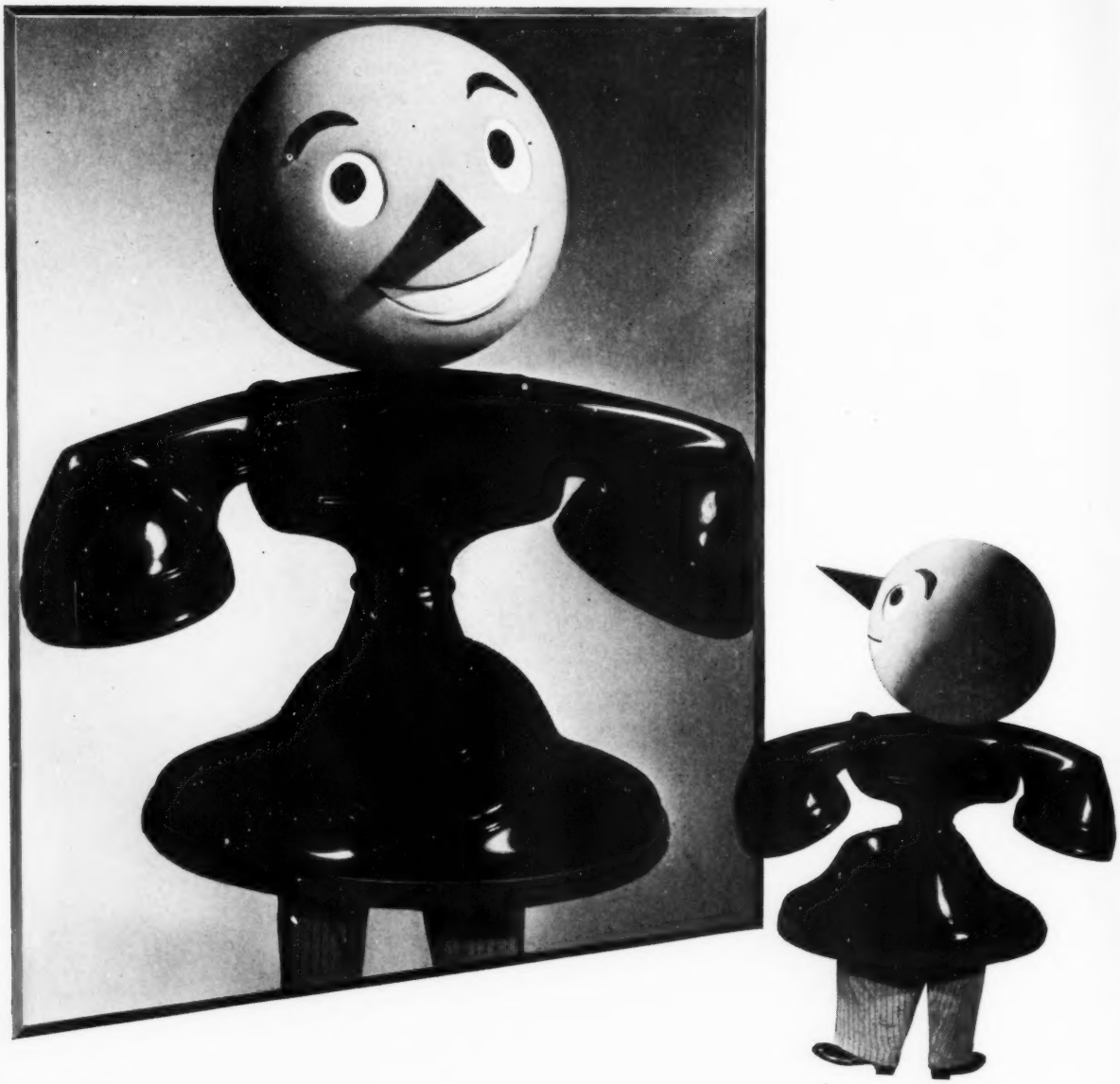

"If I were twice as big"

"Then I could give the public all the service it wants and take care of the war on top of that.

"But I can't get bigger now because materials are needed for shooting. So I'm asking your help to make the most of what we have.

"Please don't make Long Distance calls to centers of war activity unless they are vital. Leave the wires clear for war traffic."

BELL TELEPHONE SYSTEM

American Forests

Editor
OVID BUTLER

Associate Editors
LILIAN CROMELIN
ERLE KAUFFMAN

Published monthly by

THE AMERICAN FORESTRY ASSOCIATION

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The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational programs in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. All its resources and income are devoted to the advancement of conservation in the interests of public welfare. All citizens are welcomed to membership.

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AMERICAN FORESTS

The Editors are not responsible for loss or injury of manuscripts and photographs while in their possession or in transit. All manuscripts should be accompanied by return postage. The Editors are not responsible for views expressed in signed articles. Notice of change of address for AMERICAN FORESTS should be received by the tenth of the month preceding issue. Entered as second-class matter at the Post-Office at Washington, D. C., under the Act of March 3, 1879. Acceptable for mailing at special rate of postage provided in Section 1103, Act of October 3, 1917, authorized July 10, 1918. Additional entry at Baltimore, Md., December 29, 1931.

The Readers' Column

PRIVATE FORESTRY IN ENGLAND

SIR: I am enclosing a clipping from the *London Times,* commenting on the July issue of AMERICAN FORESTS, believing you would like to know of the high regard felt abroad for your good magazine.

I am afraid that the future of private forestry in Britain doesn't look too bright. Since there is so little natural reproduction, planting is necessary, and, since it costs about $50 an acre to plant and fence, nobody can afford to do it, even if they could get the labor and fencing wire.

Meanwhile, every stick large enough for a mine prop is being cut. Then the Scott report on land planning after the war hardly mentions forestry. All the more reason for America to keep the forestry flag flying! — *Barrington Moore,* Corfe, Taunton, England.

STOP SMOKER FIRES

SIR: The present national emergency emphasizes the necessity of smokers and others exercising the greatest possible care in thoroughly quenching their cigar, cigarette, pipe, camp and other embers, particularly in fields and woods, and the dryer the season the greater the caution necessary.

Few smokers realize the danger they cause, or how many of them have unknowingly started serious fires.

When the Shenendoah National Park (Virginia) was first officially opened CCC guards stopped every car entering and said, "Please do not start any fires here today." This caused some resentment among those stopped, who had no intention of starting a fire. Possibly it might have been more effective if the guard had said, "Please put out cigarette and cigar stubs before discarding." While discussing this phraseology with one of the guards we both saw a cigarette snapped into the dry roadside grass from a car that had just passed and a small blaze immediately started as the car sped on. Thirty such fires were reported for the day but thanks to the CCC boys there was little damage.

The writer in his more than forty years of constant nature trips through fields and woods has come across many fires in various stages, mostly incipient, and the evidence pointing mostly to smokers, some of whom have been brought back to help put out the fire; others have run away when it was called to their attention.

John J. Keetch, a North Carolina forester, states that in some ranger districts at least fifty per cent of the fires are caused by smokers, and on a national basis smokers are reported to start at least twenty-five per cent of all forest fires.

All city fire departments and insurance companies could add tremendously to the evidence on smokers' fires, with homes and business places destroyed, running into many millions of dollars' loss a year.

Will smokers and others of the nation rise to the occasion and cut to a minimum the losses of valuable timber needed for defense purposes; the ground cover needed to prevent erosion; the loss of millions of our native flora of value for esthetic and ornamental purposes and their fruits as food for birds essential to help control the insect pests of the farmer?

Will tobacco companies realize their responsibility and cooperate by publishing continually as a national defense measure a note of caution in the press and on their packages?—*P. L. Ricker,* Washington, D. C.

DANGER TO COOK FOREST

SIR: The Pennsylvania Department of Forests and Waters is definitely opposed to the building of a dam on the Clarion River which would destroy any of the virgin hemlock and white pine in the Cook Forest Park area.

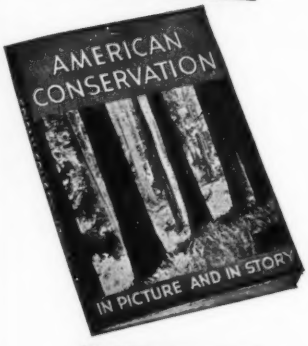
A preliminary survey has been made by the U. S. Army Engineers for the proposed Clarion River Hydro-Electric Dam, in the Rivers and Harbors Bill, pending in the Senate Commerce Committee. The water level in accordance with this survey would be such that some of the stands of virgin timber would be inundated and remaining areas would be largely made inaccessible because of water and swamp conditions. Again, there is a possibility of biological changes which would result in the early destruction of the old timber. Because of its age it is very susceptible to all manner of insect and fungi attacks.

A water level on the proposed site to the elevation of 1,330 feet would result in the destruction of 111 acres of timber. A dam at the site selected would completely change the environmental conditions under which the forest has developed during the past 400 years. If this damage would continue, within a period of ten years it is estimated that eighty per cent of the remaining large timber would be destroyed.

Cook Forest Park has long stood as a symbol of forestry in Pennsylvania, a reminder of a glorious past and a beacon of new forestry accomplishments. It is a heritage which when destroyed, can never be replaced.—*R. Lynn Emerick,* Chief, Bureau of Forests, Harrisburg, Pennsylvania.

MAKE SURE THERE IS NO DIMOUT OF CHRISTMAS

A WORLD at war needs the joyous release which Christmas brings. "Keeping Christmas" is the spirit of America. Wartime activities, however, mean less time for shopping, so your Association offers two Christmas gift suggestions to bring cheer to the recipients and satisfaction to you as the giver.



No. 1—A year's subscription to **AMERICAN FORESTS** including membership in The American Forestry Association. Your choice of any one of the three books illustrated—at the Christmas price of $4.

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BOOK DESCRIPTIONS

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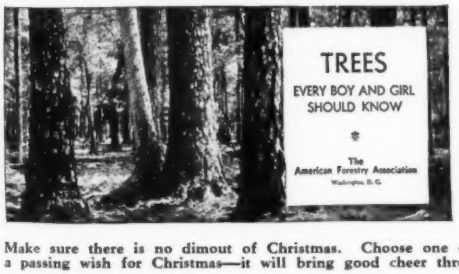
KNOWING YOUR TREES by G. H. Collingwood. $2.50. 12 x 8¾". 224 pages. More than 100 important American trees are included in this volume. Actual photographs of all trees, their bark, leaf, flower and fruit, along with descriptions of their range, habits, uses and identifying characteristics, make this the outstanding tree book of today. Designed for reading convenience, it is also beautifully printed with cover in four colors. This is a gift that never loses its usefulness or appeal.



TREES EVERY BOY AND GIRL SHOULD KNOW. 50c. 3 x 8½". 112 pages. This book of 99 attractive strip drawings by Calvin Fader, pictures 38 hardwoods, 38 evergreens, and 23 famous American trees, such as the Cambridge Elm, the Charter Oak, The Nation's Christmas Tree and others important in American history.

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BIG TREES

The American Forestry Association is sponsoring a national hunt for the discovery and preservation of the largest specimens of the different species of typical American trees. Locate, measure and nominate your candidate in this competition. ACT NOW to make known and save the largest specimens of America's trees. For further details, send for the Association's special announcement of this Big Tree hunt. Mail your nomination with records and pictures to The American Forestry Association, 919 17th Street, Northwest, Washington, D. C.

KING CHESTNUT

THE American chestnut, *Castanea dentata,* is now almost extinct, due to the ravages of blight, but in the Great Smoky Mountains National Park, particularly in the Greenbrier section of Tennessee, a few great specimens remain. King of these, and without doubt the largest American chestnut in the world, is a giant standing near Lowe's Creek in Sevier County.

According to Dr. Stanley A. Cain of the University of Tennessee, who nominated the giant, it is twenty-seven feet, three inches in circumference, four and a half feet above the ground. Another giant chestnut in the same region is twenty-two feet in circumference.

Dr. Cain, who has made a study of big trees in the Greenbrier section, reports that giants are not exceptional in the virgin forests of the Park. Others discovered and measured by him will be reported in coming issues of AMERICAN FORESTS.

Tennessee's Chestnut—Still Monarch in a Dwindling Kingdom

PROPHETS of a few months ago who heralded no bottlenecks in the flow of wood for prosecution of the war are today choking over their own words. No one can read Arthur Upson's statement of the lumber situation, digested on page 509, without seeing a disconcerting row of bottlenecks against the forest background.

The over-all picture is that by the end of the year war needs for lumber will be unfulfilled by some 6,000,000,000 board feet. That represents an alarming shortage. If expressed in terms of lumber in the average frame dwelling, it would mean a shortage of 400,000 houses. And the outlook for 1943, according to Mr. Upson, is just about as black.

Paradox No. 1 in the situation is that we have trees growing in the forest more than sufficient to meet war's requirements. Paradox No. 2 is that we have existing sawmill capacity to produce several billion feet more lumber than the war is calling for. The major bottlenecks lie in between—in getting trees cut, transported to mills, and converted into lumber.

The only bright lining to the picture is the herculean efforts which governmental agencies and forest industry are making to break the bottlenecks. These efforts are on two broad fronts: one, to effect economies in the procurement and utilization of wood, and the other to speed up the manufacture of lumber.

* * * *

One plan to break the lumber bottlenecks, about which nothing has been officially announced, is a proposal by the Department of Agriculture to set up in the Forest Service a $100,000,000 agency to be known as the "Forest Products Service." The agency would be financed by the Commodity Credit Corporation and would be expected to cooperate closely with the War Production Board, the War and Navy Departments, other government agencies and with private industry. As formulated, the charter of this agency would enable it to engage in activities designed to stimulate and supplement the production of lumber and wood necessary to meet war requirements.

Included in these activities would be (1) surveys to locate available timber and unused mill capacity, (2) studies of transportation, equipment, labor and other problems hampering the production of forest products, (3) purchase of lumber and wood and the establishment of concentration yards where stock piles could be built up, (4) sale of these stocks to military agencies of the government and to war industries, (5) surveys of wood requirements and production and correlation of activities relating to them, (6) purchase of timber tracts, the building of mills and the manufacture of lumber when and where essential to the war effort, (7) extension of credit to existing private mills to enable them to maintain and increase production, (8) seizure of plants of recalcitrant owners in emergency cases and operation of them under executive orders, (9) making available timber now inaccessible in the national forests by the building of roads and new operating plants, and (10) promotion of conservation by correlating purchasing and production centers with stumpage supplies, and when found feasible by requiring satisfactory woods practices in purchase contracts.

Although proposed back in early July, the plan appears to have encountered a bottleneck of its own in the form of interdepartmental procedure and governmental red tape in general. Naturally an undertaking so extensive in scope would have to clear through the War Production Board and have its approval. The best unofficial information at this time is that the plan is on or near Mr. Nelson's doorstep.

* * * *

Another pertinent aspect of the lumber shortage is possible impacts it later may have on large tracts of forests reserved from cutting because of their national park and state park status. Whatever danger lurks here will strike first at those tracts containing so-called specialty trees such as Sitka spruce in the Northwest and yellow birch in the Northeast. The demand of the allied nations for these two species for aircraft construction has become voracious and the situation as respects adequate supplies is critical.

If the war lengthens out for several years and its demand for wood continues, pressure to invade national and state parks for scarce species is a potential contingency that the American people may have to face, forbidding though the thought may be. As a matter of fact, one hears already talk of drawing upon the Olympic National Park, said to contain 750,000,000 feet of Sitka spruce. It is devoutly to be hoped that extremities of war will not force this question and that the military will not make such proposals until sure beyond all doubt that adequate lumber supplies cannot be obtained elsewhere.

Ovid Butler

TREASURES OF AMERICA—PEAK AND PINE, LAKE AND STREAM—TO BE CHERISHED AND DEFENDED

"THY WOODS AND TEMPLED HILLS"

By JOHN L. BLACKFORD

Photographs by the Author

CONSCIOUS that its sons are battling to the death to hold the most glorious heritage any nation ever possessed, an awakened America is resolved to play its destined role in the present world struggle with a tenacity that even the militaristic minds of its enemy cannot comprehend. American fighting men around the globe know that the richest prize the Nazi or the Jap can hope to achieve is their homeland, the continent of North America.

History does not record an earthly empire of such wealth and grandeur as this birthright of a free people. Aware of this, Americans have confidently matched the fortitude of their nation against the regimented might of their foe. If frustration was experienced at first, it was because Americans failed to utilize the abundant resources of their land for its protection — resources more than sufficient to make it impregnable, resources adequate to bulwark any attack that might be launched against the enemy on distant shores.

Only when Victory is won may America count her treasures of peak and pine, of lake and stream and shore as safe. Only then will the enlightened plans this nation has evolved for the preservation of its natural heritage be certain and secure. And after Victory, never again will Americans through complacency risk this heritage. By its magnificence, by the grandeur of American forests, rivers and mountains the pioneer traditions of the nation are symbolized, its strength made enduring and its future manifest. There is no more inspiring birthright to defend than this . . . .

Emblematic of the priceless natural heritage that Americans are defending today is Fairy Castle, in Bryce Canyon National Park, Utah (upper left). No other nation possesses within its borders so varied an array of natural wonders, so readily accessible to all its people

Glorious Mt. Fay (lower left) crowns the Canadian Rockies in Banff National Park, Alberta, symbolic of the common interests and heritage that unite two nations in a struggle for freedom. Like the United States, Canada has preserved its historic resources for the benefit of a free people

As the Watchman, rising sharply above the Rio Virgin in Utah, guards the wonderland that is Zion National Park, so American fighting forces, flung out over the world's battlefronts, are guarding America's woods and templed hills, and American citizens are awakening to the full import of greed-inspired alien aggression

At Point Lobos, on the Carmel Coast of California, the "Point of the Sea Wolves" has been called the greatest meeting of land and water in the world. This is America!

A well of inspiration is the world-famous Grand Canyon of the Colorado, in Arizona. The great abyss exposes the earth's oldest rocks and has added many chapters to scientific knowledge in the fields of geology, paleontology and natural history

The feet of intrepid explorers, of northern fur brigades, of trappers, traders and map makers have scarcely fallen silent on the storied Athabasca Trail. Yet to beautiful Peyto Lake, in Banff National Park, Canada, shimmering azure blue in the Valley of the Mistaya beneath the snow-crowned ramparts of the Rockies, the free peoples of all America may come on broad highways. Only full appreciation of how priceless are these woods and waters can measure the service of the men who are now fighting for them

It is one of the wonders of America that there are still within its borders wide reaches where whole peoples continue a primitive life and where native culture is undisturbed — as in Monument Valley in the Navajo country of Arizona and Utah

Along the headwaters of the Thompson River in Montana, blue sky, summer clouds, a forest of pine and a flower-dotted mountain meadow create a paradise of beauty and peace. For such treasures, Americans will forever defend their land

THE WAR ON THE WOLF

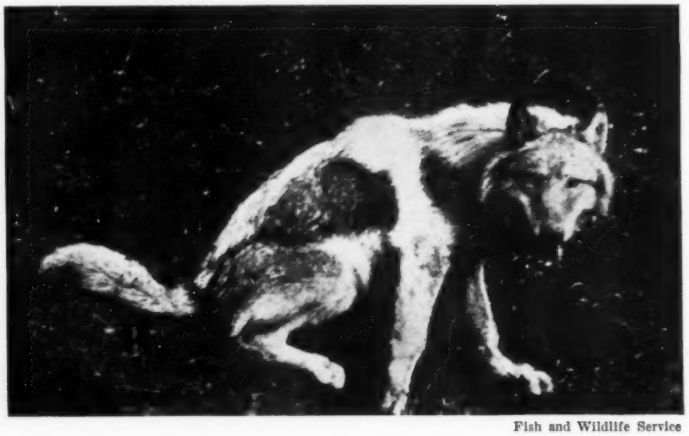
By
STANLEY P. YOUNG

The History of a Costly and Bloody Conflict Which has Raged Across North America in the Wake of an Expanding Livestock Industry for More than Three Centuries

FROM the beginning of recorded history, the peoples of many races inhabiting the greater part of the world have been at war with *Canis lupus*, more familiarly known as the big, bad wolf. When this conflict first began is buried in the dust of the ages, but the chances are that when man and wolf first met on the early hunting grounds it was war at first sight. For at least 2700 years the practice of mankind to reward wolf killers has been more or less continuous. Indeed, no other mammal over such a long period of time has been the object of so many legal acts stipulating tribute for its extirpation.

What this centuries-old conflict has cost man is incalculable. It is conservatively estimated that bounties paid for predatory animal control, including the wolf, in the United States, Canada and Mexico exceed $100,000,000. But this is insignificant when compared with the economic and social disruptions caused by wolf depredations. For example, it has been stated that wolves held back the development of the sheep industry in Virginia for the better part of the seventeenth century. Certainly their devastating raids seriously affected the expansion of livestock westward across the prairies. All told, America's wolf problems have been so great and so threatening during the past 300 years it is safe to say that in no other country, in such a comparatively short time, have laws for the riddance of wolves been passed in such numbers or amended so frequently. Everything from hogs and tobacco to rum and gunpowder, along with American, English and Mexican money, have figured in the items employed at various times to reward the killer of a wolf.

A long and costly Old World background in wolf control set the stage for the conflict which began almost as soon as the first settlers set foot on the North American continent—a conflict which has continued in one form or another up to the present day. In the beginning, the wolf and the puma, commonly called the panther, were the animals against which the pioneers pooled their efforts. Later, as development swept inland and westward,



Fish and Wildlife Service

For 2,700 years, Canis lupus, better known as the big, bad wolf, has had a price on his head

bobcats, coyotes and bears were added to the predators to be dealt with. But, up until recent years, *Canis lupus*, the big bad wolf, was the great and real enemy, not only directly to human life, but to human economic interests as well.

From what can be gleaned from available records, it was in ancient Greece that the wolf first had a price placed on his head. Or at least it was there that the wolf bounty plan is believed to have originated. It was in this early land, it will be recalled, that perfection in speed, strength, skill and endurance was rewarded by the payment of certain tributes. This was particularly true in the Isthmian and other games. The great range of the wolf as it foraged for food, compared with the small size of land areas in ancient Greece, plus a large wolf population, placed the Greeks in constant conflict with the animal. Tribute payment, being in vogue for many decades, was the most likely plan for controlling wolves.

Old Italy, too, had a reward or bounty plan for wolf killing, but it is recorded that it was seldom paid by the government. Instead, the hunter carried a wolf skin, proof of his prowess, from door to door, and, according to Douglas in *Old Calabria*, received a small present, "half a cheese or a glass of wine," from each householder.

Edgar, King of England, in effecting a treaty of peace with the King of North Wales in 965, levied a tribute of 300 wolves yearly to be paid him. King Henry III, during the half century following 1216, in an effort to rid portions of England of wolves, made grants of land to individuals who would work toward their destruction. This land donation was in reality a bounty for hunting wolves. Two centuries later, during the reign of Henry IV, land was given for the blowing of a horn to frighten wolves, as well as for chasing them.

In Scotland, during the twelfth century reign of William the Lion, the Monks of Melrose made a practice of setting wolf traps. A bounty of two shillings was given by James I in 1427 for the slaying of a wolf in a barony, payable by the baron. Thus the baron became a sort of head wolf hunter.

Ireland had its share of wolf infestations and depredations, which led to the breeding of the Irish wolf hound. The employment of these dogs, coupled with bounty payments, dealt the wolf population in that country a staggering blow. These excellent hounds became so proficient in hunting down wolves that by 1652 Oliver Cromwell issued an order forbidding their removal to the Continent, where they were much in demand.

The ravages of wolves early in the seventeenth century brought the bounty law to North America. Massachusetts and Virginia were the first states to legalize wolf killing

With bounty plans of one kind or another in effect for so many centuries in Europe and the British Isles, it was to be expected that similar plans would be instituted in the early colonial possessions of the mother countries. Many of the colonists in North America were fully versed in the operations of bounty schemes, and they lost little time putting them into effect when livestock was introduced. It is recorded that in 1609, two years after the founding of Jamestown Colony, horses, cattle, sheep and swine were brought over from England. The cattle multiplied rapidly, largely because of legislation prohibiting their slaughter, but

sheep suffered from the ravages of wolves. The same situation prevailed in the Plymouth Colony in Massachusetts, where the wolf was quickly and thoroughly outlawed. So thoroughly, in fact, that the colonial lawmakers of Massachusetts adopted the first bounty law in America—a law designed to exterminate the wolf. This was in 1630, two years before Virginia legalized payments for wolf killing. After Virginia, bounties were adopted by New York and Pennsylvania. The laws of these four states were subsequently used as models for the various wolf bounty acts adopted throughout North America.

Pennsylvania, under the governorship of William Penn, employed professional wolf hunters, probably the first in America. George Washington, desiring to increase and improve the American brand of sheep, expressed the viewpoint, to which Thomas Jefferson subscribed, that the eastern United States could never be a great sheep country because of the heavy infestation of wolves "which cannot be extirpated." In this he was partly right, for in the final analysis it was not the bounty killing of wolves that effected their final elimination so much as it was the destruction of their habitat.

Partner in crime to the wolf was the puma, commonly called the panther or mountain lion. He, too, paid for his depredations

The Massachusetts wolf bounty law was promulgated by "A Court of Assistants, holden att Boston, November 9th, 1630," whereby "It is ordered, that any Englishe man that killeth a wolfe in any pte within the lymitts of this pattent shall have allowed him 1d (one penny) for euy beast & horse, & ob. (a half penny) for euy weaned swyne & goate in euy plantacons. . . ."

This ingenious attempt to assess the bounty tax according to the number of domestic animals on a "plantacon" was repealed in 1632. New laws followed, however, providing for an increase in bounty and giving encouragement to the killing of wolves by dogs. "Every man that kills a wolfe with hounds," ruled the General Court in 1640, "shall have 40s alowed him, & whosoever kils a wolfe with trap, peece, or other engine, shall have 10s alowed him, to bee paid by that towne where the wolfe is killed, & if hee bee kiled out of any towne bounds, it shalbee paid by the Treasurer."

This regulation remained in operation only eight months, chiefly, it appears, because of general dissatisfaction over the fact that any keeper of suitable hunting dogs was exempted from taxation for bounty payments.

A special inducement was offered Indian hunters in 1644 in the form of a bounty of one bushel of corn or three quarts of wine for each wolf killed, payable by the town constable, provided the Indian could prove that the wolf was taken within the town limits. The word *town*, of course, referred in those days to a geographical area that might contain several villages and many farms.

Apparently corn and wine were not too attractive to the Indian, for in 1645 it was observed that "great losse and damage doth befall ye comon wealth by reason of wolues." Therefore, it was ordered that any person "either English or Indian" be paid ten shillings for a wolf hide. At the same time various schemes were tried in sharing payment between the towns and the colony, or "county." In some cases, the treasurer of the colonial government paid the whole amount, in others the town was responsible, and under still another plan the responsibility was divided, the town paying two-thirds of each bounty.

The Indian, however, shared equal bounty privileges only for a short time. By 1648 the amount allowed the white man for each wolf was increased to thirty shillings; the red man was given but twenty. At the same time the Court provided for wolf dogs to be kept at public expense—probably the first authorization of its kind in North America. In this the selectmen of the towns were authorized to purchase with public funds as many wolfing dogs as they might choose. The authorities were to "impose the keeping of them" on whatever citizens they saw fit. No other dogs were to be allowed in town except by the selectmen's permission. An interesting provision was added that no magistrate could be compelled to give up *his* dog, nor could he be forced to harbor any of the wolf hounds.

The variety of these enactments tried out in the first eighteen years of the existence of the General Court, give ample evidence of wolf depredations in the early days of the Massachusetts Bay Colony. Twelve separate pieces of legislation relative to bounty payments were adopted during this period in an effort to destroy the wolves. And more were to follow. In fact, bounty laws on wolves remained in effect almost continuously for more than two centuries after 1661.

The reward for each grown wolf increased to $15 for most of the sixty-year period from 1780 to 1840. Payment was made to claimants by the towns, which were reimbursed by the treasurer of the province. Under the law of 1817, this state bounty could be supplemented by additions from the treasury of any town through action of the voters at regular town meetings.

The Massachusetts code of 1860 provided that towns might vote such sums as "they judge necessary . . . for encouraging the destruction of 'noxious animals.'" This permissive regulation is included also in the code of 1882, after which date the nuisance of "noxious animals," including wolves, seems to have declined to the point where legislation was no longer necessary.

Virginia lawmakers, comparable to those of Massachusetts, changed the wolf bounty act many times as the colony increased in population, as well as in numbers of its livestock. Of all the states, including also all of the Canadian provinces, Virginia has had wolf bounties upon its statute books for the longest time—from 1652 to 1939—a period of 308 years.

The original wolf bounty laws for the Virginia colony are unique. The first, enacted by the Grand Assembly on September 4, 1632, at James City, as present-day Jamestown was known, provided that "Noe man shall kill any wild swyne out of the forrest or woods . . . without leave or lycense from the Governor. But it is thought convenient that any man be permitted to kill deare or other wild beasts or fowls in the common woods, forrests, or rivers in regard that thereby the inhabitants may be trained in the use of theire armes, the Indians kept from our plantations, and the wolves and other vermin destroyed. And for encouragement to destroy the wolves, it is thought that whosoever shall kill a wolfe, and bringe in his head to the commander, it shall be lawfull for such person or persons for every wolfe soe kild, to kill also one wild hogg and take the same for his owne use."

In these early days of the Jamestown Colony hogs and other livestock ran wild, receiving no special care. They were considered community property and only under certain conditions or when times were particularly hard were they permitted to be taken for essential meat. Therefore, the right to kill one wild hog from this livestock sanctuary as compensation for killing a wolf played an important part in the Virginia bounty scheme—for a time.

In 1646, the colonists either lost their taste for pork or meat generally was plentiful, for the Assembly was moved to order that "Whereas many losses are lately received by the inhabitants by reason of wolves which do haunt and frequent their plantations; for the better prevention and for the destroying of them, it is inacted that what person soever shall after publication hereof kill a wolfe and bring in the head to any commissioner upon certificate of the said commissioner to the county court he or they shall receive one hundred pounds of tob'o. for soe doeing to bee raysed out of the county where the wolf is killed."

Since tobacco was by far the most widely used currency in Virginia at that time, it would seem that its use in payment for wolf killing was effective, for it continued in use for a century and a half. Not until 1744 was a cash payment offered—six shillings for an old wolf and two shillings, six pence for a young one. The tax to meet these awards could be collected in money or in grain. A bounty payable in dollars does not appear until 1798, when seven counties were permitted to offer $4 for an old wolf, $2 for a young one, and eight other counties were allowed bounties of $10 and $5.

Another plan tried in Virginia was an assessment or order on the Indians to capture a specified number of wolves during the year. Seventeen groups of Indians, estimated to have 725 hunters, were "enjoyned and assessed to bring . . . "145 wolves annually for a reward of 100 pounds of tobacco a wolf. This scheme was adopted in 1668, but was discarded the following year since it had "not produced the effects as were hoped and desired." No statement is included as to whether the red men resented the compulsion or were just not interested in the hopes and desires of the colonists.

Fish and Wildlife Service

The author, one of the country's outstanding authorities on wolves, brings one in alive

On more than sixty different occasions, over a period of three centuries, Vir-

(*Continuing on page* 526)

WOMEN IN THE WOODS

Sawmills and Logging Camps of the Pacific Northwest, Facing Critical Labor Shortages, are Now Employing Women — and With Good Results

By MARY HORNADAY

WOMEN with keen eyes and level heads are donning slacks and helping to solve a serious manpower shortage in the lumber industries of the Northwest. With United Nations demands for lumber mounting daily and three men now doing the work of five in the woods and sawmills, lumber companies are beginning to hire women for almost every kind of job that doesn't require physical strength.

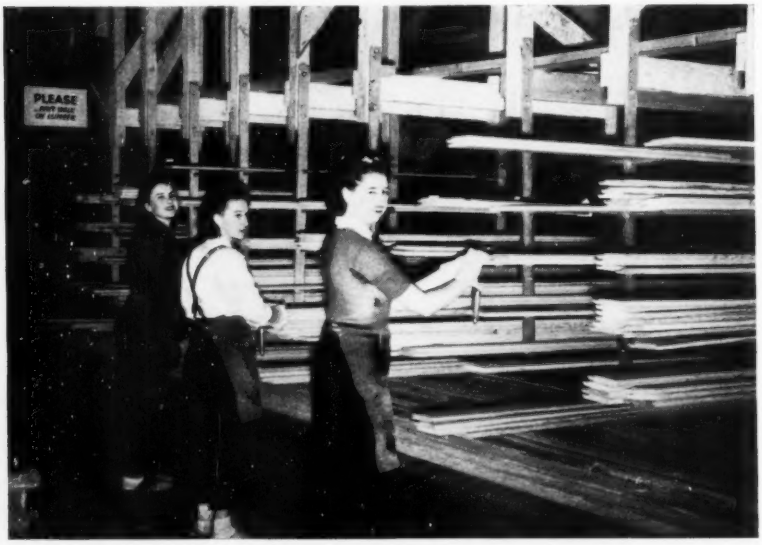
Brawny men in the sawmills and even in isolated logging camps are no longer surprised to find women working next to them. Some are wives of men who have gone into the military services; others are taking the place of men lured off to the numerous airplane and shipyards of the Northwest before the War Manpower Commission began to require "certificates of separation."

Some companies, of course, have been employing women for certain types of work in the sawmills for a decade or more. The Weyerhaeuser Timber Company, of Longview, Washington, for example, has been using them since 1929 in racking, tying, trim pulling and grade marking. But to many other firms, such as the St. Paul Tacoma Lumber Company at Tacoma, Washington, women workers are a distinct novelty.

Veteran employees of the St. Paul Tacoma Company recall that in the last war a few women came into the lumber yard to pull weeds. Now the company is ready to take on women in a dozen jobs in its yards and for certain duties in the forest.

Even with draft deferments promised for any man needed in the woods, lumber companies must employ women if they are to overcome lagging production schedules, Harry Naubert, personnel director for the St. Paul Tacoma Company, told a group of newspaperwomen who recently toured war plants from coast to coast under the direction of the National Association of Manufacturers.

The Weyerhaeuser Company, which has been pioneering in the use of women, reported that there are many jobs they are doing satisfactorily at Longview. In the planing mill, for instance, they have been found to misrack a smaller percentage of lumber than men, and they do neater stacking. In the beginning women's work at Weyerhaeuser was limited to the planing mill. When men began to go to war and to the shipyards, however, they were employed on any jobs which they are physically able to handle. Today they are working in all departments and on all shifts.



Racking lumber in a planing mill—women make fewer mistakes and do a neater job than men

In the sawmills, women straighten lumber on the chains, operate the gang-saw lineup, clean up and pull lumber on the green chains. They run the "locies" in the yard; work in the framing department; load cars in the pres-to-logs plant. In the dry kiln department, women are engaged in clean-up work and one is a machine operator at the unstackers.

In the salvage department, they are cleaning and classifying parts.

They are taking orders in the shipping department. Out on the cargo deck they are grade marking and end painting. In the planing mill, their old stronghold, women pull lumber on the rip chain, feed moulders, on-the-end matchers, and other machines.

Much of the work in the woods is too fast, heavy and difficult for women. Also there's the problem of convincing rough-and-ready foremen that lumber camps are the place for women. Nevertheless, in some parts of Oregon, women are even replacing men on logging crews.

Mr. Naubert frankly admitted to newspaperwomen in Tacoma that he had run into the problem of foremen who weren't too keen to have women in their camps. "If I can sell our foremen on the idea we will have women on our crews within thirty or sixty days," he promised.

In the Oregon forests girls are making $1.17 an hour as "whistle-punks," blowing steam whistles to signal the logging crew. They are also taking jobs as "flunkies," or cooks, and as bedmakers in the logging camps.

Lumbering is full of traditions that women will have to learn if they are to be around the camps and mills very long. Also, the lumberman has a lingo all his own. Eventually he may have to hold classes to teach his language to the women, just as veteran airplane men are doing for the girls in the aircraft plants of Southern California.

Jobs opening up in the lumber industry will afford opportunities for husky girls so often spurned in the aircraft plants where the emphasis is on agility and stature that will fit into an airplane cockpit. Mr. Naubert said he would expect women he hired to weigh between 150 and 160 pounds. Women in the twenty to thirty-five age group are preferred at the present time, but as in other war work there is a possibility that the age range may be widened as the demand for women's services grows.

Women workers differ widely in temperament. Some are seen hastening to their jobs with the enthusiasm of youth going about a great adventure. Others approach with the purposeful tread of those who have seen their nation's need and are doing their duty.

Steady nerves and a firm grip are necessities for women lumber workers. The forest, where giant trees are felled, and the mill, with its whirring saws and fast-moving belts, are far removed from housekeeping—even when the baby cries, the tea kettle boils over and the grocery boy is at the door all at once.

Because their jobs entail considerable climbing and danger from belts and saws, the women have generally taken to wearing slacks and sweaters to work. Leather lumber jackets are usually taken along to the forests.

In most cases, the West Coast lumber companies are paying women the same wages paid men in their brackets. This practice is in keeping with War Labor

Strong arms are needed to pull and straighten lumber on sawmill chains

In the framing plant, steady nerves and a firm grip are essential

Board rulings against wage discriminations because of sex. In the mills, the girls make about $6.60 a day; in the forests about $150 a month plus maintenance.

Harry E. Morgan, manager of the Weyerhaeuser Company's Longview branch, pays tribute to the women in his plant thusly:

"Work in a lumber mill is entirely foreign to most women, and it is gratifying to see how easily they adjust themselves to their surroundings and how quickly they become proficient in their jobs.

"This success is not entirely due to the women, however, because they have had many hours of instruction from the men who work with them and from their foremen. This cooperative spirit has never been so evident at our plant as during the past six months, with both men and women putting their shoulders to the wheel in an effort to provide essential materials for use in winning this war."

To date the lumber industry has been able to employ all the women it can use. In fact, women have written from all over the country wanting jobs in the Northwest forests. Those who expect to see their husbands drafted are anxious to get settled in jobs.

In time, however, a labor shortage, even of women, may develop in the Pacific Northwest. Shipyards, aircraft factories and fruit growers are vying for their services. Need for women workers is already so desperate in Portland, Oregon, that one machine shop operator told newspaperwomen that "most manufacturers will take on a greenhorn in five minutes if she shows a willingness to work." Oregon had a first statewide registration of women in the country last February, but when they called for help to harvest crops last summer, they found their lists already out of date. Many of the women had already taken employment. Seattle held a voluntary registration of women last August, but the number who signed up was disappointing.

Eventually, many lumber company officials predict, the government may have to resort to compulsory registration and allotment of workers, both men and women, to keep production schedules at a satisfactory level.

Plant officials are hopeful that the women they are taking on will be more stable workers than men. Experience has shown that they aren't so apt to be lured from one plant to another by higher wages.

Day nurseries to care for young children may be one way cities of the Northwest will increase their womanpower. A group of nurseries has already been opened in the Seattle public schools where mothers can leave their youngsters from 7 A. M. to 7 P. M.

Part-time work has also been suggested by the Manpower Commission as a possible way of attracting more married women into (*Continuing on page* 527)

THE FOREST PATRIOTS

William Herschell

An oak tree, tall and stately, came down with mighty crash
That scared the baby saplings and thrilled the elm and ash.
"Pray, why all this?" the elm inquired. "What are you leaving for?"
"My country calls," the oak replied, "and I must go to war!"
Then, while its neighbors harkened, the oak, with sturdy heart,
Told how it had enlisted to do its humble part.

"There's need for ships," the oak began, "to sail the troubled sea;
A good old wooden fleet they want—so they've enlisted me!
Of iron and steel there's scarce enough, which makes me glad indeed,
For now I, too, can help convey the stores our Allies need.
I'll face the foeman's frenzy with a zeal to do or die,
As did the good old merchantmen in years now long gone by."

The great oak's loyal ardor sent a thrill through all the trees,
And soon a call to mobilize was hurried down the breeze.
One volunteered to be a bridge, one would a barracks be—
No slacker bolted from the lines of this brave company!
The beeches, elms and cottonwoods marched off beside the oaks;
The hickories said for cannon wheels they'd proudly serve as spokes.

Soon all the trees but one had gone to muster at the mill—
The one was just a sapling left to guard a lonely rill.
Yet, while it mourned its lowly state and thought existence hard,
A schoolboy gladly claimed it for a flagstaff in his yard.
Which points a wartime moral all of us should keep in view—
That, though we're great or humble, there is something each can do!

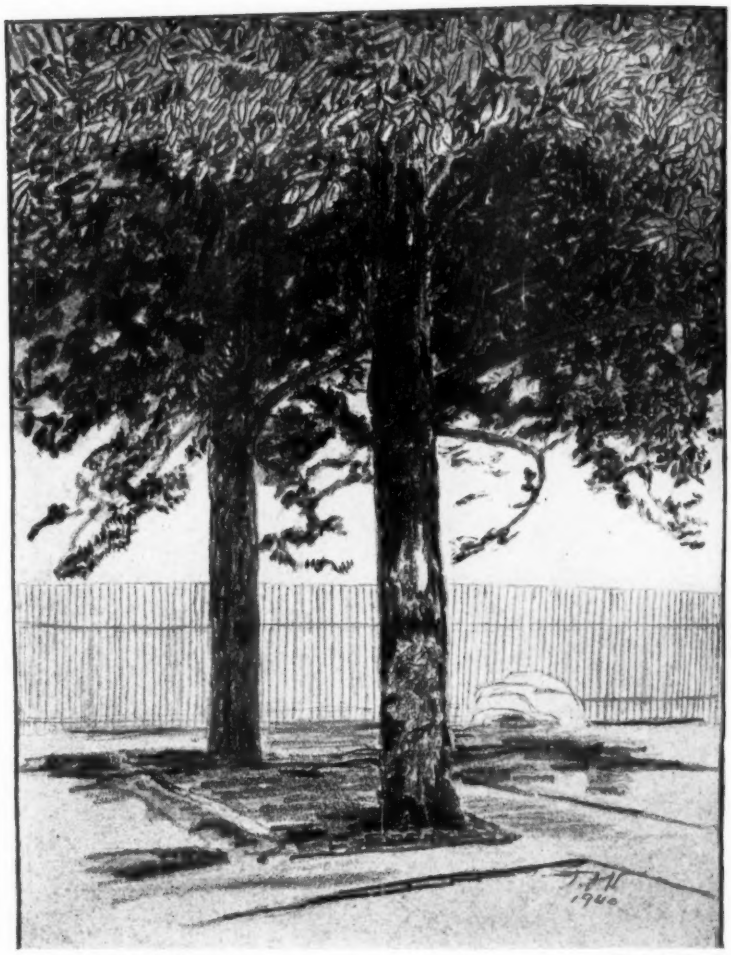
Originally published in AMERICAN FORESTS for July, 1918, when the forests were fighting World War I

DRAWING TREES

BY FRANK A. WAUGH

Early and often it has been pointed out that the camera has largely displaced the pencil and the brush for taking the portraits of trees. Or of horses and society belles, for that matter. The modern camera is so complete and perfect, so many persons have become expert in its use, and the typographical methods of reproduction have been so enormously improved that there seems to be no place left for the old-fashioned methods of record.

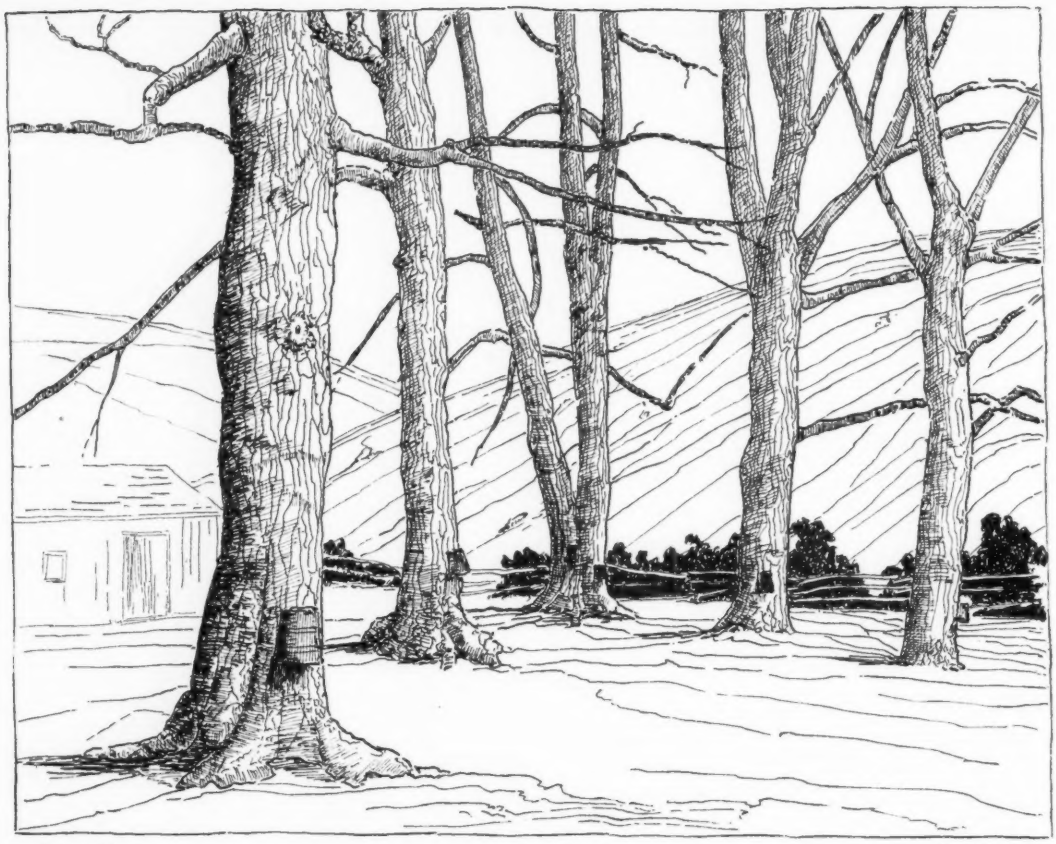
Yet all the while some artists and some tree lovers have clung to the old-time skills of drawing and painting, believing that they could put something into the picture, literally, that the camera was missing. One remembers with a wistful smile the late William Robinson of England, voluminous writer on trees and gardens, who would never allow his magazine nor his books to be illustrated with photo-halftones, insisting rather on woodcuts painfully hand-made by competent artists. One remembers, too, with thanks, the beautiful etchings of native trees done by such eminent American artists as Alfred Hutty, W. R. Locke and Hans Kleiber. Prints like theirs have an esthetic appeal wholly different from the best photographs and, in a way, superior to them.



Magnolias At The Hermitage
—Drawn with lithographic pencil

Frank A. Waugh

Without laboring the point one may fairly say that, in certain fundamental ways, the drawing of a tree may be more representative of the



Sugar Grove
—Pen Drawing

Frank A. Waugh

object than a photograph. There are truths that can be discerned by the artist and emphasized in a drawing which, in a photograph, are obscured in the mass of other details, all equally emphasized in the best photo-print. Or a certain specimen, otherwise noble and typical, may have some fortuitous and uncharacteristic defects. These the artist with brush or pencil may subdue or omit altogether, while playing up the size and majesty of the tree before him.

In the matter of environment, too, the painter or etcher has a capital advantage. How many hundreds of times have we photographers found a tree or group of trees of special interest and beauty but rendered impossible to our uses because the view, no matter how managed, was cluttered and crowded with electric wires, poles, billboards or ugly, irrelevant buildings? The tree lover, using his pencil, has no compunction in drawing the trees and omitting the billboards. He may even substitute other features more appropriate to his forest specimen. One of the best art teachers I ever knew, the late Charles H. Woodbury, always insisted that in sketching trees his pupils must express also their environment. In forestry this would be ecology; in art it is the simple truth; but the artist with his pencil has a great advantage over the forester with his camera when this simple truth is to be recorded.

This whole transaction deserves to be looked at also from the opposite end; what happens to the artist? We all realize that a camera is a very great help in the study of trees. Get your boy scouts to photographing trees and they will soon learn their types and characteristics with an accuracy they could never master by unaided observations. But if your boy scouts, or other tree lovers, will take to sketching their trees and will follow it conscientiously, they will soon find that their habits of observation are made much more exact and critical than ever before. This experience is universal and important.

Not a word of this must be taken in disparagement of the camera nor in dispraise of the photograph. I have myself photographed trees almost the world over for more than fifty years, and I consider the camera indispensable. The only answer is that we want both. We want the best possible photographs of trees everywhere; but we also want good paintings and drawings done by artists who know these media and who—and this is very important—also know their trees. For an artist, to draw trees in the way we are asking, must be a close student of his subject and above all an intimate lover of trees. We all hope that everyone who has anything to say in praise and admiration of trees may be encouraged to say it freely, using his full vocabulary, whether through the medium of poetry, painting or photography.

The Big Oak
—Etching

Frank A. Waugh

FEET IN THE EARTH

By CHARLES ELLIOTT

SOMEWHERE in the dim and distant past, after the earth had cooled and hardened, when seas and lakes and rivers were no longer steaming caldrons and life had worked its way out of the ocean, the job of roots began. Plants, spreading everywhere over the rock surface, began driving their roots into seams wherever they could find a hold, splitting granite, ripping at hardened stones and, along with ice, sun and wind, tearing the earth apart into tiny particles of soil.

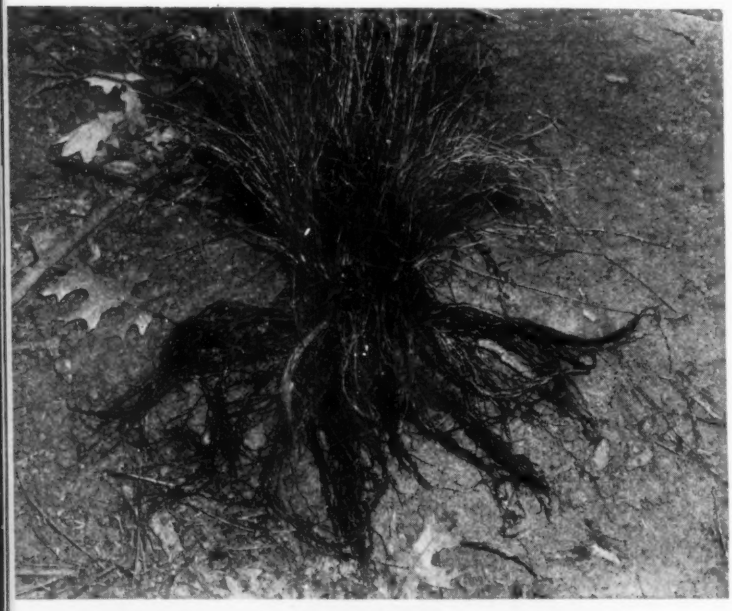
Then when the soil, washed by rain, collected in potholes, niches and depressions, the plants appeared again, thrusting down their roots to hold it in place. Since then the roots of plants have been an all-important factor in saving soils from erosion. Where roots of grass and trees and other plants are destroyed and the soil left exposed to ambitious elements, the earth is usually removed in vast quantities by wind or water.

The dust bowl of the Middle West is only one example of destruction of the countless army of tiny grass roots which held the soil in place. A few years after the buffalo grass was plowed under and the land planted to agricultural crops, the productive prairies of this vast region were in the arms of the wind, swirling hundreds of miles across the continent. The Soil Conservation Service, a huge governmental agency spending millions of dollars each year, was created for the purpose of returning roots to the soil, to stop the senseless flow of praedial wealth into the sea.

The two most important jobs of the individual root system are to hold the plant erect and to supply water and raw food material to the leaves or stomach of the plant.

For these functions, a plant has two types of roots, the large, strong roots which support it, and the small "hair" roots which are its mouth. The latter search through the soil for moisture and tiny food particles, which they send in solution up the stem to the growing parts.

Not so many years ago scientists believed that "cohesion" was responsible for raising water out of the ground many hundreds of feet into the air to the topmost branches and leaves of enormous trees. This theory was based on the "pull" of leaf surfaces from which the water evaporated. Recently, however, experiments have been made to show that this cohesion theory is at least partly wrong. The laboratory doctors have discovered that roots contain powerful pumping units. For example, a tiny tomato root, no larger than a match stem, was found to develop a pressure of ninety pounds a square inch for pumping water into that part of the plant above the ground.



Upper — A small clump of grass, with a thousand feet, helps hold the earth in place

Lower — The prop roots and aerial roots of the Mangrove drop out of the limbs to set firm feet in the earth

Almost every type of plant has different or unusual root systems. And man has learned to use many of these roots in one way or another. When he lived by stone-ax and arrow, he found that some roots tasted good and at the same time gave him strength and energy. Others, he found, would stop pain in his body. From still others he secured dyes and paints.

Among the roots man has learned to use for food are turnips, beets, radishes, onions and carrots. Today white beets are a source of a great quantity of the world's sugar. Prior to the present world conflict, the United States alone produced almost 2,000,000 tons of beet sugar every year, more than three times the amount of sugar produced in this country from cane. Under the war emergency, this production will no doubt increase. Both bitter and sweet cassava roots are important items of commerce. The bitter cassava is said

The seed of a Strangling Fig found a resting place under a scale of this palm. Its roots sunk into the bark, extending earthward into the ground

The Banyan, too, develops strong aerial roots, dropping and lodging them firmly in the earth

to be extremely poisonous with deadly amounts of hydro-cyanic acid. Yet when the poison is extracted and the roots dried, this cassava becomes the basis of food in Central America and portions of South America. It has even been introduced in Africa, where it is grown for the fine grade of starch it produces. The tapioca of our tapioca pudding comes from cassava.

Although a member of the poisonous nightshade family, the white or "Irish" potato is more widely used throughout the world than any other kind of food. It is a root which came originally from the high plateaus of the Andes in South America. It was discovered by the Spaniards in the empire of the Incas. With those hardy explorers it went back to Spain, spread over Europe and returned to America with the first colonists. It was banned in Scotland in 1728 because it had never been mentioned

Prop roots hold this tree erect and are so powerful that their pressure has cracked the concrete wall and steps nearby

in the Bible, yet today the value of the white or Irish potatoes grown in the United States is approximately $200,000,000.

The sweet potato or yam, another important item of food, is not related to the Irish potato, but belongs to the morning-glory, a family of beautiful flowers. This is not as valuable an item of commerce as the white potato, since it brings to American farmers some $50,000,000 annually.

Primitive tribes of the earth have many uses for roots. The natives of the East Indies still use derris-roots for catching fish. These, when thrown into the water, act as a narcotic agent. Fish, overcome by the drug, roll on their sides on top of the water and are gathered into boats, unharmed. The Cherokee Indians used this method of taking fish, but instead of derris-roots they used roots of the red buckeye tree.

Yellow jasmine roots, which are also strongly narcotic, saved many lives during the American Civil War. When no other drugs were available, the surgeons prescribed for their patients a piece of jasmine root which produced a paralysis of both sensation and motion throughout the body, but in no way affected the mind. With his patient thus under control, the surgeon was able to operate skillfully and many times successfully.

Tequilla, a native Mexican drink, is manufactured from cactus roots. The Indians of North America were said to have used a natural wood they called *Amole* when taking their baths. Rubbed on the body, it produced a lather which was both cleansing and refreshing. They dug the root from which this wood was derived from chlorogalum or soaproot bush, which contains large quantities of glucoside saponim, a lather-producing chemical.

Your favorite brier pipe is not a brier at all, but a *bruyère*. The *bruyère* is the tree-heath of the Pyrenees Mountains in southwestern Europe. Pipes are made from the gnarled roots of this plant. The English name brier comes from briere, which is the peasant pronunciation of *bruyère*.

U. S. Forest Service

Strongly rooted in the earth below the stone, this evergreen giant exerts sufficient force to break up the very granite of the mountain

Plants sometimes have roots which do not originate in the ground. Probably the most interesting example of this is the aerial root, usually found in the tropics. These roots are dropped from the limbs of trees. Where they touch the ground, they grow into the soil and become a supporting arch for the limb which drops them. Roots spreading out from this aerial appendage into the ground act in much the same capacity as the tree trunk itself, gathering up food and moisture. In this way, one tree may grow into an entire forest which is dense and impenetrable. One type of American tree which drops aerial roots is the banyan. The early Europeans named this tree after the Hindu merchants, or *banians*, who spread their wares for sale under these trees on the Persian Gulf.

The mangrove forests of southern North America must also produce their roots in any way they can. Before the seeds of this tree are released, they develop a tapering root system on one end and a plumule of leaves on the other. When the seed is dropped it falls right side up, sticks into the mud, and begins to grow immediately. Mangrove trees also have the ability to produce aerial (*Continuing on page* 527)

EDITORIAL

TO HARVESTERS OF THE FOREST

EARLY in the war, President Roosevelt in sending a budget message to Congress declared: "It is necessary in wartime to conserve our natural resources and keep in repair our national plant. We cannot afford waste or destruction for we must continue to think of the good of future generations of Americans. For example, we must maintain fire protection in our forests and we must maintain control over destructive floods."

A simple interpretation of these words is that the Commander-in-Chief accepts neither waste nor destruction of natural resources as inevitable by-products of an all-out war effort. With the lumber shortage becoming critical (see page 509) and with the War Production Board putting increasing pressure on lumbermen to produce more timbers and still more timbers, it is well to keep the President's caution constantly in mind. The old adage that haste makes waste applies to the harvesting of forests no less than to the doing of other things. We must win this war. If we can win it with the minimum of waste and unnecessary destruction of our forest resources, the cleaner will be our victory and the stronger our national position when the war ends.

Today forest industry is strained to its utmost to keep pace with war's demands for wood. In this situation many well-informed people see the outlines of disastrous forest devastation. It is not simply a case of what the forester calls over-cutting. Probably in the country as a whole the total volume of wood, severed from the stump or otherwise consumed during 1942, will be less than the natural replacement by growth. But it does appear that in many areas, the old, bad practice of timber mining is coming back as a war measure; that growing stocks of ripe and unripe forests alike, are being slashed without regard for the future.

It is reported that Germany is over-cutting her forests, and some may take this as justification for our doing likewise. Actually drastic over-cutting of German forests began the moment their longstanding, conservative state forestry organizations were seized by the Nazi autocracy. By 1936, over-cutting was rife. Every Oberforstmeister, who dared, described it with tears in his eyes. Yet the visitor to German forests was utterly unable to detect such over-cutting, unless he took the trouble to study the maps and timber inventories. Harvesting was still done carefully and with due regard for restocking. There was just more of it.

There is a vast difference between too rapid cutting and wasteful destruction. The first is a matter of discounting future tree growth because of today's emergency. It can be mitigated by a solemn commitment to take extraordinary measures to expedite that growth. But forest devastation is a hold-over from the land-clearing era—the removal of merchantable logs, regardless of the present or future fate of other growth in the forest. Its premise is that the forest has no future.

At a time when labor is scarce in the woods and every hour's work of every man is needed for log production, it is natural for the harassed operator to pay less attention to forest practices than he did a year ago. Yet he would not insist that the war will be won by such slight savings as can come from neglecting sound forest practices. The other side of the coin is that when peace comes Americans must live with local timber shortages intensified by war cuttings.

The forest industries also will have to live with the judgment of the public. And, as has happened so often in the past, this judgment will be arrived at without much weighing of the pros and cons. Industry's production record, in the face of unprecedented problems, may be over-shadowed by the people's outraged surprise at finding that it was accompanied by unnecessary devastation and that industry's oft-professed intention to practice forest management was lost in the all-out war effort.

President Roosevelt's words notified the forest industries that the American public expects them to treat the forests well, even when subjecting them to drastic harvesting. And they carry the implication that if private agencies and the state governments are not able to do a workmanlike job, the federal government may step in sooner or later to repair the damage.

There is evidence that private agencies and the states can do a workmanlike job. For example, there never has been a year in which the forest fire menace was more effectively met than in 1942. This was a demonstration in which state and federal agencies, private landowners and operators, and an awakened public participated. With like determination, private industry can do an equally good job in maintaining steady progress in the application of sensible harvesting practices. Clearly it has that chance and the opportunity is of serious and far-reaching import to its future and to the future of the nation.

THE LITTLE GREEN GUARDS

From Four to Fourteen, They are Turning in a Man-Sized Job in Oregon's Forests

By NORMA RYLAND GRAVES

LEFT, right. Left, right. There they go with spades and shovels!

It's farewell now to the little Green Guards, for unlike Uncle Sam's regulars, they are part-time soldiers only. They volunteer for service between the months of May and October.

They don't wear uniforms—the chances are they don't even know what the war is all about—but when it comes to spotting forest fires and preventing others, the little Green Guards are in the front line, one hundred per cent strong.

The Green Guards are the junior division of the Keep Oregon Green Association, but are more familiarly known as "Guards" or "K.O.G.'s." This first year of the junior organization finds thousands signed up to help their Uncle Sam.

In the early part of 1942, the state forestry department set out to solve a serious problem. This year—more than any other—they must curb the immense yearly loss to the state through forest fires. For from Oregon's forests comes the wood that helps build modern battleships, that constructs steel-hulled cargo ships, that furnishes the new airplanes with spruce or other woods.

Oregon must not only save the trees that supply one-sixth of the nation's timber, she must feed her own fast-growing ship industry that, like a voracious Oliver Twist, clamors for more.

Realizing the problem and meeting it are sometimes difficult—particularly in war times. With trained men in the forestry department daily being inducted into the armed forces, with ship-building industries drawing others, the state faced a shortage of available manpower. This at a time, too, when the danger from saboteurs was constantly increasing.

Why not use the Guards? Why not mobilize their sharp eyes to guard the big trees that build the big ships? The boys and girls would thus learn to share civic responsibilities early in life.

How they responded! Over five thousand strong! No Lilliputian army ever set out to its giant task more willingly than did the little Green Guards. They must stand guard over the green trees, for if the smallest fire were not reported, forests might be destroyed. The Axis would be helped just that much.

"It's up to you in 1942!" From hundreds of slogans submitted the Guards chose this one as best typifying the spirit of their organization. Have they met its challenge squarely? Judge by their record. They have cleared forest underbrush, helped build fire trails, and in other ways greatly decreased the fire hazards of the 1942 season.

Five thousand strong, the Green Guards, junior division of the Keep Oregon Green Association, were on the fire line this summer. Here is a crew ready for duty

In the early spring they helped distribute 30,000 fire prevention stickers. This was the beginning of their campaign to placard public places and buildings with striking green and white posters urging everyone to "Keep Oregon Green." Front windows of 5,000 Guard members blossomed forth with "service" flags—the green tree.

The public was soon aroused and letters began to flood the main office. A city school superintendent asked for material to distribute to all of his schools. A member of a rural school board wrote in: "We are so busy with rubber and saving hay crops that we haven't much time.

But we will get the boys and girls together on Saturday nights and Sundays to talk things over." From the older boys came offers to help plant seedlings.

Although most grown-ups object to keeping a strict record of their activities, not the Green Guards. They take particular pride in writing down in their manuals all of the fires they have either helped put out or given warning through the proper authorities.

Thus in one fourteen-year-old captain's book is this notation: "I told our district fire warden about the mill where we live. The sparks come across and burn up all our grass and flowers and we never have a nice front yard."

R. C. Kuehner

His job is to prevent fires
—and he doesn't miss a bet

When this report came in, the assistant fire warden was sent to the small lumber town in the mountains. He verified the young captain's story and took necessary means to curb the danger. Here again the alert young eyes of a guard possibly saved the town from a serious loss of property—perhaps life.

Around their own homes, the guards are on the alert to see that there are no fire hazards. Even when they start out for a picnic in the woods, it is not unusual to find someone carrying a spade or bucket—they're taking no chances. Not if they are Green Guards!

Although it is too early in the year to estimate re-

Preventing, spotting and fighting fire isn't enough for the Green Guards. They want to know all about the forests they protect, from the nursery where the young trees are grown to the logging of the great timber trees

sults, those who are directing the work of the Green Guards state that they have been responsible for checking well over a hundred forest fires, a hundred fires that didn't have a chance to grow. And all because the little Green Guards were aware of their responsibility as citizens.

"I put out a fire yesterday and I have a new baby brother," confided one Green Guard. All of which illustrates why the movement is succeeding.

Originally the guards were organized as one means to publicize the Keep Oregon Green Association, a group of volunteer citizens pledged to protect the valuable resources of the state—forest, farm and field. In suggesting this youth plan, its founders hoped for only moderate success. Fanned by their enthusiasm, however, the idea spread until it has reached the present proportions.

How much does it cost to join the Green Guards? Unlike most clubs, there are no fees, dues, or other costs. When they grow up and join the adult organization, their annual fees will be one dollar. Or they may buy associate memberships for as little as twenty-five cents. But to the juniors, everything is free.

Nor are there restrictions as to creed, race or color. Each guard receives with his arm insignia a manual instructing him in fire prevention, the reporting of fires, fire suppression and forest protection. He is also instructed on various types of farm hazards and how to employ preventive measures.

The only request made of Johnny Jones is that he must sign the pledge. On the green membership card is space for this along with his signature, address and club number.

But the thing that makes Johnny's eyes pop with pride is that he is asked for his thumb print. Yes, sir—ee! A man means business when he joins the Green Guard.

This last requirement has occasioned many a smile on the part of state officials as letters containing various requests come to their attention. Take, for instance, this letter from an eight-year-old: "We have no ink to make a thumb print but we have tractor grease. Will that be alright?"

Enrolled in the Guard are members whose ages range from four years upward; and while one naturally suspects that a four-year-old may not understand all the aims of his club, the older boys, from eight to fourteen years old, certainly do. This is their pledge:

"As one who believes in the aims and purposes of the Oregon Green Guard, I pledge myself to protect the heritage of my State—her Farms—her Fields—her Forests.

"I will obey all official forest protection rules. I will learn the names of the nearest Forest Fire Warden and my local Civilian Defense Warden. I will prepare myself to detect and suppress fires in the area assigned my unit by the Fire Warden. I will report all fires immediately, before taking action. I will Think Protection, Talk Protection, Practice Protection."

Since the Green Guard is a state-wide project with no restrictions, its roster at times reads like a junior "Who's Who," for all the youth organizations are represented. Boy and Girl Scouts, along with members of the 4-H Clubs, have been particularly active in this project, their national leaders encouraging them to enlist. The Girl Scouts have made and donated 25,000 "fag bags," to be distributed to smokers entering the forest. Large enough to hold a package of cigarettes and a folder of safety matches,—fag bags are a constant reminder to the smoker to be careful with fire.

So that they may function more efficiently, the guards are organized in small groups, recruited usually from the same neighborhood for quick assembly in case of an emergency. Groups of more than five members elect a captain, who must be at least fourteen years old.

Appealing as actively to their young imagination as the thumbprint requirement is the promise of becoming a captain. Then, like a real captain in the Army, the guard will be entitled to wear double bars on his insignia.

Not long ago, a ranger stationed in one of the remote sections of the state was accosted by a tow-headed youngster of nine.

"Say, mister, kin I carry a pistil when I am captain of the Green Guards?" he asked.

"I'm afraid not, sonny," the ranger explained carefully. "You see, while the Green Guards are pretty important, they are just guards to prevent fires. They don't carry guns."

Noticing the disappointment on the boy's face, he added, "But you will be given a badge to wear on your coat or sweater—with two bars under it."

"Like a real army captain?" was the eager response.

"You bet," assured the smiling ranger, "Like a real army captain."

R. C. Kuehner, secretary of the Oregon Green Guard, believes much of the efficiency of the groups is accomplished through appealing to the civic pride of the boys and girls. As he says in his letter to each captain:

"In the army every man has his job. Every Green Guard has his job, too. His job is to prevent fires. In living up to your pledge, you are as important as any man in the armed forces.

"As captain of the Guard, you have added responsibilities. Your first duty is to inform the nearest fire warden, Civilian Defense warden or farm fire chief that there is a Green Guard in his district. Find out how he would like to have them help. If there has not been a farm fire hazard survey made on the farms in your district, get survey cards from your farm fire chief for your detail, so that they may be filled out and returned to him."

"Remember—the Green Guard recognizes authority. The person in charge of fire protection in your area is the one to whom you should look for orders. Get your detail together often (*Continuing on page* 528)

WAR CREATES LUMBER SHORTAGE

CONTRARY to expectations of a year ago, war demands for wood have come face to face with a lumber shortage of critical proportions. The shortage is due not to an over-all lack of trees in the forest, but to inability to get them out and to manufacture them into lumber in the volume and kinds required by the military. So serious has the situation become that the War Production Board has declared lumber to be a critical material and the manufacture of lumber as important as the production of implements of war for which lumber is used. Wood now ranks in importance with other strategic war materials.

This was the situation revealed by Arthur Upson, chief of the Lumber and Lumber Products Branch of the War Production Board, in a statement to the National Hardwood Lumber Association, meeting at Chicago on September 25. Picturing lumber now as scarce as many of the metals, he said that lumber production for 1942 is estimated to be about 5,500,000,000 feet short of requirements, and that these requirements would likely increase while production would decline still further.

"Based on the best information available," Mr. Upson said, "the estimated consumption requirements for 1942 total about 38,000,000,000 board feet, made up of slightly under 32,000,000,000 feet of softwoods and slightly less than 6,000,000,000 board feet of hardwoods. In 1943 the situation will change but little for as present demands for certain types of military requirements decrease other lumber requirements for prosecuting the war will increase. Against these estimated consumption figures we had a production in 1941 of nearly 30,000,000,000 feet of softwoods and a little over 6,000,000,000 of hardwoods.

"Just what the yearly production will be by the close of 1942 must of course be based on estimates. There are, however, no well informed men in the industry who maintain that either hardwood or softwood production in 1942 can equal that in 1941. Estimates of how much under, run to as much as twenty-five per cent. Using the more conservative figure, however, of ten per cent, we will have by the end of 1942 about 27,000,000,000 feet of softwoods produced as against a requirement of nearly 32,000,000,000 feet, and about 5,500,000,000 feet of hardwoods against an estimated requirement of about 6,000,000,000.

"If we can arrest the present downward trend in lumber production, . . . we still will be short by up to 5,000,000,000 feet in softwoods and up to 750,000,000 feet in hardwoods in 1943.

"What I have just said refers entirely to sawn timber of commercial species, grades and sizes. We have in addition an unbalanced production-requirements equation in certain lumber products. While it is better that I do not quote too exact figures, the volume of dimensional lumber of final quality needed for the aircraft construction programs of the United States and the Lend Lease governments, at the present time and for the next year, exceed the present rate of production by about two times. In other words, the optimum program of the United Nations calls for twice as much lumber as we see can be produced under present conditions in Sitka spruce, Noble fir, West Coast hemlock, Douglas fir and yellow poplar.

"The hardwood veneer and plywood situation is not now serious but it could become so almost overnight. Recently Messrs. Kaiser and Hughes were given the 'go ahead' on plans to build three large cargo planes using wood in part. If it proves feasible to build large numbers of these planes, the demand for plywood will greatly increase. Right now we estimate the capacity of the hardwood plywood industry, with its present equipment, at 180,000,000 square feet a year on a 3/32 inch basis.

"Still a third lumber product of great war usefulness is softwood plywood. Ninety per cent of the present plant capacity of 1,600,000,000 square feet annually on a 3/8-inch basis is now going to preference rated orders of A-1-j and higher. Each month, however, finds a greater proportion of the output going to direct war uses and Lend Lease governments.

"In addition to these, there are scarcities in several woods used for specialized purposes, as for example, white oak for ships, dogwood and persimmon for shuttles and bobbins, tough ash for plane parts and handles, and both hardwoods and softwoods for heavy structural purposes.

"The over all lumber situation is therefore not rosy. Production is going down, but it is not because the lumber industry is lying down. I know lumbermen and I see much information coming into the War Production Board that proves their patriotism, their desire to do their part, and their willingness to forget profits and business as usual. Production is not decreasing because of lack of plant capacity nor of timber supplies. With all other factors favorable, present logging and sawmill equipment could produce from 42,000,000,000 to 44,000,000,000 board feet a year. Except in isolated instances there is merchantable and accessible timberland which can be cut without destroying the forest, although I will admit that in some regions private stumpage is held at too high a figure. Other factors are holding down lumber production."

Loss of labor, both skilled and unskilled, in woods and mills, was given by Mr. Upson as the chief reason for declining lumber output and the growing shortage. He estimated that this reason accounts for from forty to fifty per cent of lumber production's

troubles. In the South and West, where the bulk of the nation's lumber is produced, he said that major losses in mills and woods have ranged from twenty-four to thirty-seven per cent and that these losses had been intensified by inefficiency due to inexperienced replacements. Two-sixths of the labor loss he attributed to the draft, three-sixths to employment opportunities in the war industries, and one-sixth to a labor drift.

The second reason for lumber shortage, Mr. Upson said, is the inability of the small mill to continue to run at total capacity, particularly in the South and along the Atlantic seacoast.

"There are a lot of reasons for this," he explained. "These include an actual loss of market because of the lower efficiency of the wholesaler, and the fact that the war agencies do not find the small mill; the inability to pay over-time; difficulty of the small mill operator in converting his operation to a wartime economy; a lack of understanding of how to secure his necessary equipment, repair parts and operating supplies; lack of finances; and a whole group of worries, uncertainties and complexities as to what the government wants, future markets, reluctance or inability to proceed in the face of present difficulties; and finally some of the effects of the conservation or limitation orders already issued by the War Production Board. Careful study of the small mill problem is now in progress."

Also contributing to the lumber production problem, according to Mr. Upson, is lack of equipment of all kinds needed by the industry to operate at highest efficiency. Where timber does not exist, nothing can be done about it, but I do believe that some action should be taken to arrest the upward trend in stumpage prices and to make locked-up timber available."

Discussing what the War Production Board is doing in its efforts to remedy the situation, Mr. Upson said: "We are attempting to reduce the 38,000,000,000 board foot requirement figure by a number of actions. We all know that federal lumber specifications have been noteworthy from many angles but principally in regard to calling for lumber non-standard in one or more respects, asking for higher grades than are actually needed, contracting all requirements in a few high quality species, failure to permit substitutions of species and grades, and up to recently awkward procurement methods and failure to stagger purchases of similar items.

"Through the Army and Navy Munitions Board some noteworthy actions have just been taken which I am sure are going to help this situation very much. The Army, Navy, Maritime Commission, Defense Plant Corporation, Lend Lease, and perhaps others are banding together to improve their methods. The Lumber Branch has advocated that step, has provided information on ways of correcting faulty design, specification and procurement programs.

"Besides cooperative work of that type the Lumber Branch is studying the estimated needs of the other large consumers of lumber. We have brought about changes along these lines which will make it easier to produce and to furnish lumber products of the kind such as are wanted and thus in turn to increase the availability of lumber or make the present lumber go further than heretofore. Three of the largest uses for lumber at present are military and defense plant construction, war housing, and building repair, including farm needs. These account for about 20,000,000,000 feet of the estimated 38,000,000,000 feet requirements. We in the Branch believe there are means of reducing the consumption of lumber for these three general purposes without lowering lumber-use efficiency or actually eliminating needed construction. The savings ought to run as much as 3,500,000,000 feet a year.

"I am not so optimistic on keeping the requirements down, even with the above mentioned possible consumption savings. We are in a war to the finish. France gave us much timber in the last war, the British Empire was more timber self-contained. In this war we have to furnish not only all our own country's needs but much of what our Allies must have in lumber and lumber products. We must fight on many fronts, not just from Turkey around to the English Channel, as in the last war. We need more boats, more airplanes, more everything in wood.

"On top of this, more substitution of wood for metals has already taken place than during the first world war. On an annual basis it now exceeds more than the 6,000,000,000 board feet and has saved 2,500,000 tons of steel, copper, and aluminum, and 20,000 tons of rubber. The use of wood for national defense began three years ago, our direct aid to our Allies one and one-half years ago. That is as long as we were actively in the first world war. Thus with respect to our dependence on wood, we are today where we were about the close of the last war, and in this one we yet have a long way to go. There is no question, therefore, that needs for wood in prosecuting the war will keep pace with our efforts on the one hand to increase and on the other to use conservatively our lumber production. Even products formerly using metals are not yet fully in production from wood—such as office furniture and caskets. I therefore see nothing ahead but a continuance of certain limitations and controls on the production, distribution and use of wood as a raw material."

DOGWOOD BLOCKS WANTED

Farm woodland owners who have commercial size dogwood trees in their timber stands suitable for shuttle blocks can help prevent bottlenecks in the textile industry by marketing the timber now, the Department of Agriculture has announced. War requirements for military cloth and textiles have increased the need for dogwood, superior to other native woods for use in shuttles, to the point where assistance of farmers is necessary to ensure an adequate supply. The situation, however, the Department made clear, does not call for sacrificing trees of esthetic value along highways.

THE CONSERVATION WAR FRONT

INDICATIONS are that Christmas trees—at least northern grown fir and spruce—will be scarce and expensive this season. Reports from Christmas tree producing regions show concern by dealers over the war problems of labor and transport. In some sections the labor shortage is so acute, it is stated, that the annual harvest of Christmas trees will be drastically reduced. In fact, only in those areas where trees are cut mainly by local farmers as a part-time job is the harvest expected to be nearly normal. In either case, it is predicted, increased labor costs will result in higher prices for Christmas trees to the consumer.

Restrictions placed on certain types of trucking by the Office of Defense Transportation, and a recent ruling prohibiting the use of flat and other types of open railway freight cars generally used by Christmas tree dealers, make shipments from northern forests uncertain. The ODT has authorized dealers to use boxcars if available, but these have a smaller tree-carrying capacity, possibly as great as twenty-five per cent. Thus, even though the normal number of cars is available, which is unlikely, the number of northern trees on the consumer market may be reduced by one-fourth.

It seems likely, therefore, that the consumer in many regions must rely mainly upon local or home grown trees. But even the availability and cost of these will depend largely upon the labor and trucking situation in December.

Favorable Fire Season in West

FAVORABLE weather conditions combined with tense organization on the part of public and private fire prevention agencies are bringing to a close one of the best forest fire seasons in years in the West. An outstanding feature of the record is that much feared attempts by the Japs to engage in extensive sabotage through the setting of forest fires have not materialized, due, it is thought, to unfavorable weather conditions and to public alertness and preparedness throughout most sections of the West where forest fires are a hazard.

As this is written, no great devastating forest fires have occurred in the West this year. There have been fires, however, and many of them, but early October reports indicate that both the number and the area burned over will be less than in the average year. By and large, weather conditions, unfavorable to forest fires, is the major factor in making this record possible. While there have been "dry spells" in some sections, the West as a whole has been singularly free of prolonged droughts with high winds — conditions which have set the stage for some of its greatest fires in years past.

Reports received by the Forest Service in Washington early in October indicate that fall rains and cool weather are bringing the West's fire season to a gratifying close. There are exceptions, however: one is the Pacific Northwest, where a drought which began in September continued unbroken in a large part of the region, bringing fire hazards to a critical point; another is the southern California area. Among precautions still in effect in dry areas were the closure of forests, postponement of the hunting season, and prohibition of slash burning. Other special alert precautions were being applied along the Oregon coast where the Japs made their only known attempt with forest fire sabotage by dropping a bomb from an airplane thought to have come from a submarine off the coast.

Another critical section of the West early in October embraced parts of Colorado, Utah, and southern Idaho. This section had abnormally bad fire conditions during August and had to contend with a number of large and serious grass fires in addition to many smaller forest fires.

With the exception of the southern part of the State, California has had a fairly normal fire season, although there have been a number of serious timber and grass fires none of which, it is said, materially hampered operations of the many war industries located there.

The Inland Empire, embracing northern Idaho and western Montana, has been especially favored by the weather gods. This section of the West is normally one of the worst from the standpoint of forest fires started by lightning. This year there was a notable decrease in the number and intensity of lightning storms with a corresponding decrease in the usual hazard. On October 1 it was thought that the critical season for this region was over.

Reports received by the Washington office of the Forest Service indicate that up to October 1, fires within the western national forests, including those in Alaska, totaled 5,966 in number, as against 6,625 in 1941 and an average of 8,360 during the past five years. From the standpoint of public care with fire in the woods, however, the record does not look so good in that it shows 1,776 man-caused fires to October 1 this year, as against 1,253 in 1941. The increase is recorded largely in California and the intermountain states and is explained by the Forest Service not as evidence of sabotage activities, but as due to the influx of war-workers to California and to favorable conditions for grass fires in the intermountain region.

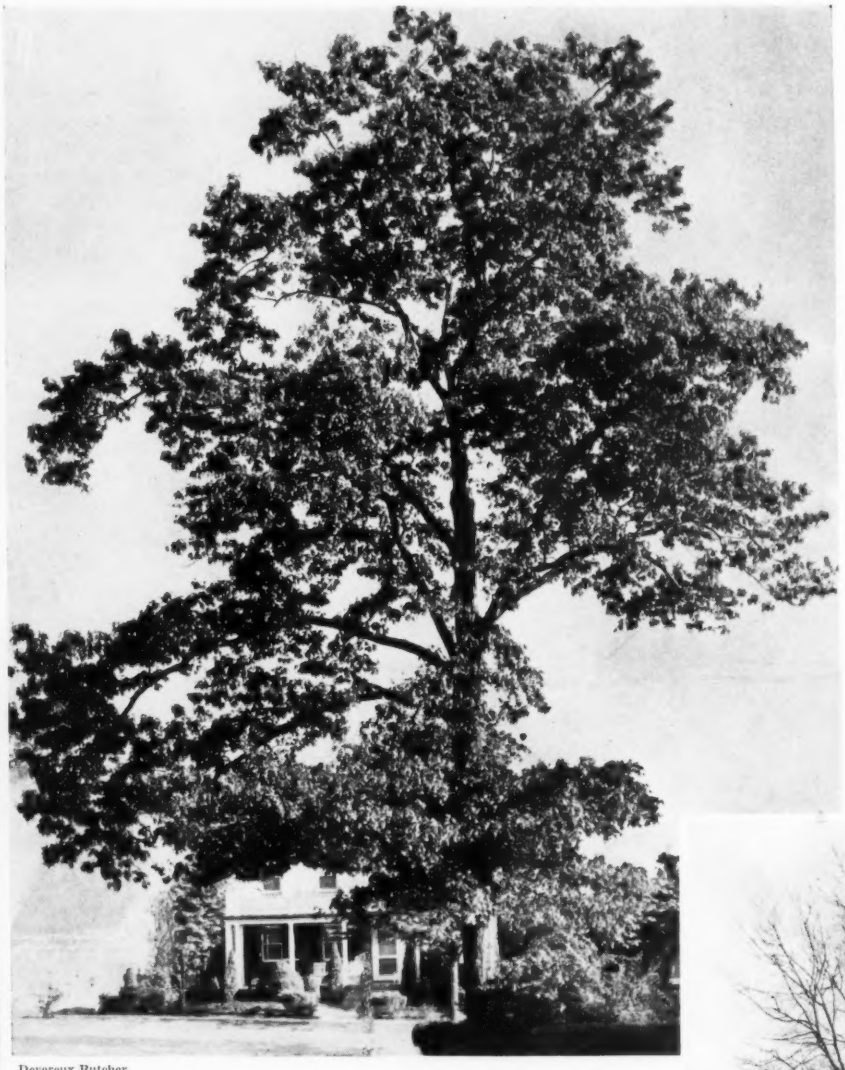
500,000 Acres of Guayule

Expansion of the government's guayule project to 500,000 acres was authorized by Congress on October 13 when the Senate agreed (*Continuing on page* 524)

SCARLET OAK

***Quercus coccinea*, Muenchhausen**

BY G. H. COLLINGWOOD



Devereux Butcher

Scarlet Oak usually reaches heights of from sixty to eighty feet, with a trunk diameter of two or three feet and an open crown

SCARLET OAK occurs naturally from Maine and southern Ontario to eastern Virginia, westward through Michigan to southern Minnesota, southward into eastern Oklahoma and southern Alabama and throughout the Allegheny Mountains. Never forming pure stands, it frequently appears in the north with white pine, white oak and red oak, and in the south with shortleaf pine, post oak and white oak. Its best development is in the Ohio basin.

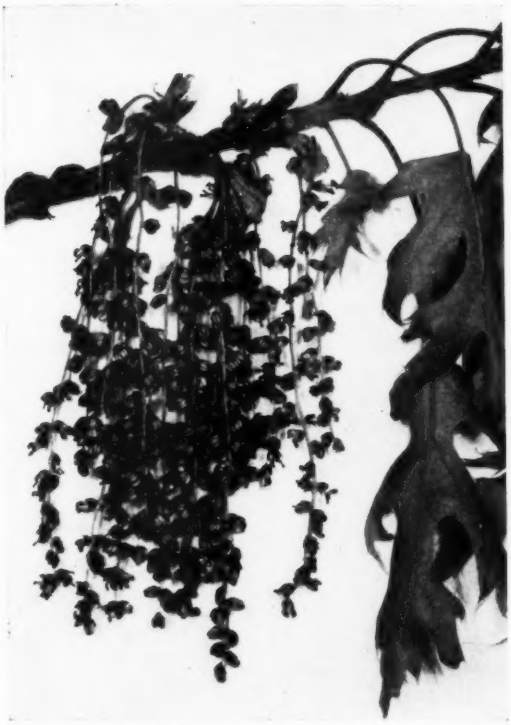
Known widely as scarlet oak, it is also called red oak and Spanish oak.

Favoring light sandy or gravelly soils, it grows well on various sites. Its large spreading lateral roots run so close below the ground level that they often break through the surface and become exposed. Generally sixty to eighty feet tall with a trunk diameter of two or three feet, the rapidly tapering trunk occasionally towers one hundred and fifty feet and reaches a diameter of four feet. The crown is open and narrow with slender lateral branches which droop slightly at the ends. Intolerant of shade, the lower crown is often marked with persistent dead branches.

The thin, five to nine lobed, bristly pointed leaves occur alternately, are three to six inches long, three to five inches wide, and broadly oval in general outline. The sinuses between the lobes are deeper than those of the black oak, extending more than halfway to the mid-rib and are rounded at their bases. The midribs and primary veins are yellow. The slender leaf stems are one and one-half to two and one-half inches long and circular in cross section. Though members of the black oak group, to which scarlet oak belongs, usually have hairy leaves, only occasional tufts of reddish pubescence appear in the axils of the veins of scarlet oak leaves. First

Maryland State Dept. of Forestry

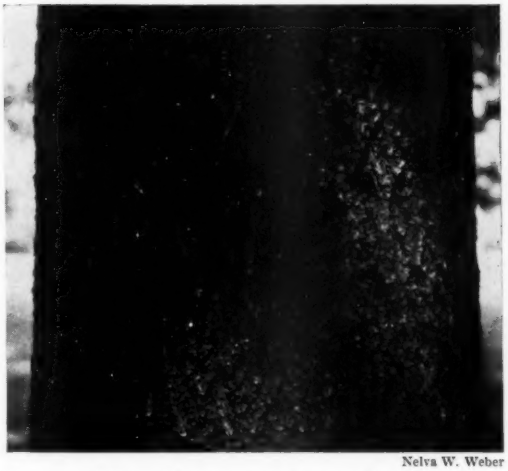
The trunk tapers rapidly, while the branches, drooping slightly, are comparatively small and spreading



The staminate flowers appearing in May or June, occur in clusters of catkins three or four inches long

Devereux Butcher

Broadly oval in outline, the leaves are smooth and have yellow primary veins, while the short-stalked acorns are often striped



Nelva W. Weber

Bark on the mature trunk is rough, dark gray or nearly black divided into scaly ridges, and is almost one inch thick

appearing bright red and finely matted with pale hairs, the leaves turn to a rich bright green. Again in the autumn, they turn bright scarlet and persist late into the season. The specific name *coccinea* comes from the Latin *coccum*, and refers to an oak gall used in making red dyes. It is applied to scarlet oak because of the striking leaf coloration.

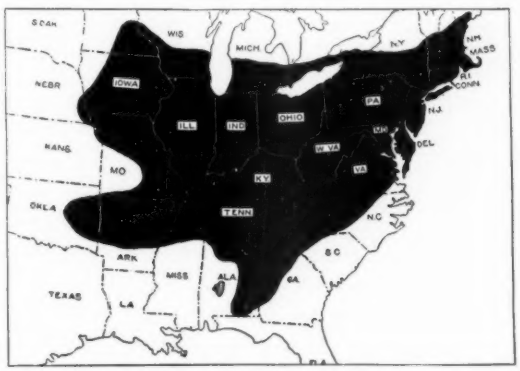
Appearing in May or June, both male and female flowers occur on the same tree. The short-stalked, oval acorns ripen in September and October of the second season. They occur singly or in pairs, and are one-half to one inch long, with reddish brown surfaces often lined with thin light stripes. The mildly bitter kernel is nearly white while that of black oak is deep yellow.

The broadly ovate, blunt pointed buds are one-eighth to one-quarter inch long, dark reddish brown, and covered with pale, fine hairs. As compared with those of the red oak they are broader in proportion to their length.

The rough, nearly black bark is almost an inch thick, divided into irregular scaly ridges, and may be mottled with gray. On young stems and branches it is thin, smooth and grayish brown to light brown.

The heartwood is pinkish to light reddish brown, strong, hard, coarse and a cubic foot weighs about forty-six pounds when air dry. Although inferior to red oak it is manufactured and sold with red oak and black oak for use in furniture, interior finish and agricultural implements.

Reasonably rapid growing, scarlet oak has been planted widely in the United States and Europe as a tree for parks and streets.



Natural range of Scarlet Oak

YOUR SHADE TREES:

By P. P. PIRONE

PREPARING TREES FOR WINTER

Bad frost crack on a young horsechestnut trunk, which could have been prevented

WINTER is probably the most critical season of the year for most trees. Extremely low temperatures can kill young trees outright or can severely damage even large, well-established ones. Heavy sleet and snow storms, prevalent from November to April in many parts of the country, cause considerable branch breakage that either completely disfigures large specimens, or results in bark wounds that enable rapid invasion by wood-decay fungi.

Although the fact is rarely appreciated by tree owners, much can be done to reduce the possibility of winter damage. November is the ideal time to execute certain practices that will enable the trees better to withstand the long winter months ahead.

Frost Cracks and Their Prevention

Extremely common on young trees, especially maples, elms, horsechestnuts, oaks, and planes, are frost cracks. These are longitudinal separations of the bark and wood. On large trees, many of the openings are wide enough to permit the insertion of a hand and may extend in a radial direction to the center of the tree. Frost cracks are most likely to form in periods of wide temperature fluctuations and consequently are most apt to occur during winter days and nights. They appear principally on the south or west sides of the trunk, since these are heated by the sun's rays and a greater contraction gradient prevails when temperatures drop suddenly during the night.

Though difficult to control on large trees, frost cracks can be prevented on small or newly transplanted trees by one of several methods. The most common one involves the placement of a protecting layer over the trunk. Newspaper, wrapping paper, burlap, or specially prepared kraft crepe paper have been used. The last, also known as "Tree Wrap," is now employed most extensively because it provides good protection, is applied more easily, and is neater in appearance than the other materials. This special paper consists of two layers cemented together by asphaltum and is sold in four- and six-inch widths, wound in bolts of twenty-five or more yards. It is wrapped around the tree in much the same way as surgical bandage is applied, at an angle that permits sufficient overlap to make a double thickness. After the trunk is wrapped, binder twine is wound in the opposite direction to hold the paper in place. Besides protecting the tree from frost cracks, the trunk wrap helps to prevent sunscald of the bark and reduces the chances of borer infestation the following spring.

Painting the trunk with whitewash is another means of reducing the possibility of frost crack development. This method is not commonly recommended because of the possible damage to the bark, especially when too much salt is used in the preparation of the whitewash.

Wax emulsions are sometimes sprayed on trunks and branches, but these materials are of greater help in preventing drying out of the bark and in reducing borer infestations than in preventing frost cracks.

The trunk of this young red oak has been covered to protect it with Tree Wrap Paper, and a straw mulch laid to prevent deep soil freezing and conserve moisture

Rigid steel braces have been placed connecting the main branches of this old locust to help prevent crotch splitting during sleet and wind storms

With particularly valuable young trees or recently transplanted ones, a good practice is to mulch the area above the roots with straw, leaf mold, or well-rotted manure. Such mulches prevent wide fluctuations in soil temperatures, keep the soil warmer, and help to conserve moisture. They are usually left on over the winter and either removed or worked into the soil in the spring. A newly planted deciduous tree collected from the woods should be mulched to a depth as nearly equal as possible to that of the mulch in its former location.

So much has been written on fertilizer applications in earlier issues of AMERICAN FORESTS and in other publications that further detailed discussion of this subject is not warranted. It is well to repeat, however, that trees kept in good vigor by frequent soil fertilization are better able to withstand adverse weather conditions and recover from mechanical damage much more rapidly than undernourished trees. Late fall, of course, is one of the best times of the year to apply the fertilizers.

Averting Storm Damage

Tree owners in the Northeastern States need not be reminded of the disastrous effects of a heavy sleet or snow storm or of strong winds. Hardly a winter passes that at least one section of the Northeast is not visited by such storms. Here again, the layman does not appreciate the great possibilities of preventing storm damage.

Trees with closely crowded branches can, by judicious pruning, be made more secure against damage. Without impairing their physiological functions or marring their beauty, other trees, with abnormally long or low-hanging branches, can be protected by shortening the branches.

Where pruning alone does not appear to be sufficient to eliminate the possibility of damage, some type of mechanical support can easily be installed as a further help to branches in supporting heavy ice loads, or in resisting twisting and breakage by wind. Such support is effectively supplied by means of wire cables placed between main branches high up in the tree. The cables are attached to the branches by eyebolts, lagscrews, or screw eyes and should *never* wrap around the limbs.

A number of cabling systems may be used. Perhaps the simplest merely involves connecting two branches by a single cable running between them. Where three large branches are to be supported, the cables are so connected as to be triangular in outline. Anyone with a fair grasp of physical laws can do a good job of simple cabling.

In cabling small trees, screw eyes are inserted into the branches, and the parts pulled together and held in place by taut steel wire. The strain anticipated when the branches are laden with ice or subjected to high winds governs the size of the screw eyes and the gauge of wire to be used.

Large trees subject to sleet and wind require more careful placement of the cables and, of course, stronger materials. Such trees may also require some type of rigid bracing, especially if they have weak branch crotches that are apt to split. It is well to obtain the services of a professional arborist for the more difficult installations in particularly valuable trees.

For more comprehensive information on how to cable structurally weak trees, as well as on problems involved in the care of damaged shade trees, it would be well to secure a copy of Farmers' Bulletin 1896, which contains an excellent discussion of these subjects by Dr. Rush P. Marshall in the United States Department of Agriculture. This is a thirty-four-page pamphlet which can be obtained from the Superintendent of Documents, Washington, D. C., for ten cents.

THE QUERY CORNER

QUESTION: We would like to plant several hundred scarlet oak acorns in a garden ready for a long range replanting in future years. Should these acorns be planted this fall or early next spring? If the latter, how should they be kept during the winter? Should oak acorns be planted with the cups, should the part of the acorn which fits into the cup be at the bottom of the hole?—J. H. C., Ohio.

ANSWER: Oak acorns can be mixed with sand placed in a loose box or flat, and buried about two feet under the ground to await planting next spring, or they can be planted directly this fall. If kept over until spring the place of storage should be moist but well drained. The depth will assure fairly steady temperature and freezing is desirable.

When planted, they should be set in garden rows with each acorn at intervals of six inches and the rows at least two feet apart. Cover the acorn with about one inch of soil. Cultivate as you would for any garden crop and transplant after two or three years to the permanent establishment or into wider rows where the trees may develop further.

The acorn cups contribute nothing to the fertility or sprouting capacity of the acorns. Neither does it matter in what position they are planted, although the little first root usually emerges near the pointed side.

QUESTION: I have noticed on some spruce trees,—black, I think—a kind of disease or blight. This blight seems to start in the lower branches on the end sprouts, killing the needles, later spreading through the tree and killing it. Can you tell me what this blight is?—Phineas Sprague, Groton, Massachusetts.

ANSWER: Your description fits the so-called Cytospora canker disease of spruces rather well, but of course we can make a positive diagnosis only by direct examination of some of the infected branches. This fungus disease attacks the lower branches first and then progresses upward. When the stems are completely girdled by the fungus, the distal portions die. Gum oozing in the vicinity of the infected area is often a secondary symptom.

Cytospora canker is not easy to control. Pruning diseased branches to sound wood, fertilization of the soil in spring or late fall, and two applications of bordeaux mixture 4-4-50 at two-week intervals starting when new growth appears in the spring, are the best suggestions we have.

TRAIL RIDERS OF THE WILDERNESS FOR 1942

FOUR expeditions of The American Forestry Association's Trail Riders of the Wilderness were successfully completed in 1942. Seventy-nine men and women from twenty-one states and the District of Columbia participated, bringing the total number of wilderness enthusiasts to ride with these organized back country pack trips to more than 650. Since 1933, when the first expedition was launched, forty-seven separate parties of Trail Riders have ridden in the wilderness areas of ten different states.

The regions explored this summer were the Great Smoky Mountains of North Carolina and Tennessee; the Sawtooth Wilderness of the Sawtooth and Boise national forests, Idaho; the Maroon Bells-Snowmass Wilderness of the Holy Cross National Forest, Colorado; and the San Juan Wilderness of the San Juan National Forest, Colorado. This last wilderness was visited by the Trail Riders for the first time.

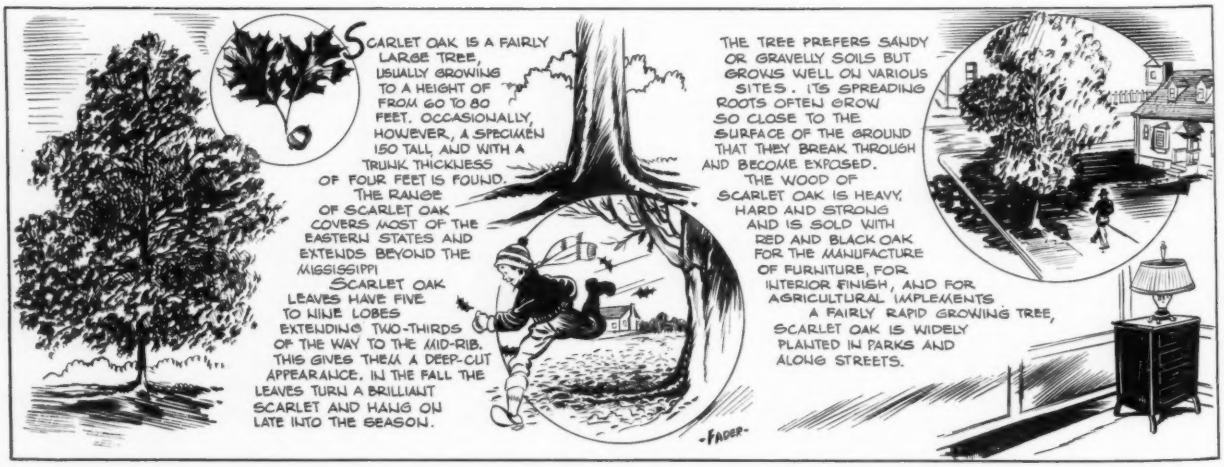
Fifteen riders participated in the Great Smoky Mountains expedition in late June —C. L. Borklund, Carbur, Florida; G. Carville Bowen, Hyattsville, Maryland; John Cermak, Bloomfield, New Jersey; Miss Priscilla Chipman, New York; Miss Emilie Dublon, New York; Paul E. Gropp, Exeter, New Hampshire; Miss Martha B. Humm, Rocky River, Ohio; Paul G. Kreider, Springfield, Illinois; Mr. and Mrs. LeRoy C. Lane, Brooklyn, New York; Miss Cynthia Osborn and Mrs. Frederick Osborn, Washington, D. C.; Parke Payne, Arlington, Virginia; T. D. Reducka, Miami, Florida; and Miss Alice Rosenberg, New York. Harris A. Reynolds of the Massachusetts Forest and Park Association, Boston, represented The American Forestry Association. Tom Alexander, Cataloochee Ranch, Waynesville, North Carolina, was in charge of packing.

Thirteen riders made up the Sawtooth expedition in late July—Miss Lillian Bariffi, New Haven, Connecticut; Miss Carrie R. Doherty, Sacramento, California; Mrs. Pearl W. Dore, Baltimore, Maryland; Miss Helen K. Glaser, Butler, Pennsylvania; Miss Edith M. Harbison, Vacaville, California; Miss Helen K. Ketterer, Pittsburgh, Pennsylvania; Burton Lawrence, Chicago; Miss Rose H. Neal, Detroit; Mr. and Mrs. Oscar B. Rosenblum, Sharon, Pennsylvania; Dr. and Mrs. Frederick H. Shillito, Long Island, New York; and Henry B. Van Dyne, Troy, Pennsylvania. Shirley W. Allen of the School of Forestry and Conservation, University of Michigan, represented The American Forestry Association. Medical officer was Dr. S. Bernard Wortis, of New York. Claude Gillespie, Shoup, Idaho, was in charge of packing.

The trail-blazing San Juan expedition in late July and early August attracted twenty-one riders—Miss Vera R. Bassett, Connecticut; David T. Beals, Kansas City, Missouri; Mrs. David Berger, Oakland, California; Miss Martha H. Biehle, New York; Miss Emma L. Bolzau, West Collingswood, New Jersey; C. Arthur Bruce and C. Arthur Bruce, Jr., Memphis, Tennessee; Miss Helen M. Burke, Evanston, Illinois; Miss Myrtle H. Carr, Lyons, New York; Mrs. Bernard J. Feurer, Kew Gardens, New York; Miss Susan Fleisher, Elkins Park, Pennsylvania; Mr. and Mrs. John E. Galley of Wichita, Kansas; R. H. Galley, Fort Wayne, Indiana; Miss Roma W. Hall, Parsons, Kansas; Mrs. Fred Harper, Denver, Colorado; Miss Margaret Kenny, Bronxville, New York; Miss Ellen Peters, Brooklyn, New York; Miss Ellen V. Seaman, Perth Amboy, New Jersey; Miss Maude Louise Strayer, Dobbs Ferry, New York; and Miss Ruth B. Verhasselt, Evanston, Illinois. Fred E. Hornaday of Washington, D. C., represented The American Forestry Association. Medical officer was Dr. Fred Harper of Denver. R. E. Venuti, Durango, Colorado, was in charge of packing.

In early August thirty riders participated in the Maroon Bells-Snowmass expedition—C. King Crofton, Rochester, New York; Mr. and Mrs. Ward Canaday, Toledo, Ohio; Dr. Herbert T. Darlington, Jr., Glen Ridge, New Jersey; Mrs. Pearl W. Dore, Baltimore, Maryland; Miss Mallie M. Faris, Tulsa, Oklahoma; Miss Caroline Flaccus, Pittsburgh, Pennsylvania; Glenn C. Forrester, Niagara Falls, New York; Miss Eleanor Florance, New Brunswick, New Jersey; Sam T. Hayward, Los Angeles, California; Miss Margaret Hensleigh, Glenwood Springs, Colorado; Miss Martha B. Humm, Rocky River, Ohio; Miss Mildred M. Humphreys, Los Angeles, California; Neil C. Hutsinpillar, Crawfordsville, Indiana; Miss Lois Jagers, Big Lake, Texas; Miss Joan Jones, Fort Collins, Colorado; Miss Ruth Kellogg, Yonkers, New York; Miss Elizabeth G. McCoy, St. Louis, Missouri; Dr. Katherine M. Mayer, Chicago; Miss Sophia M. Milthack, New York; Miss Wilhelmina Munson, Michigan City, Indiana; Miss Rose H. Neal, Detroit; S. M. Pineles, New York; Mrs. Dorothea Sheats, Washington, D. C.; Mr. and Mrs. Karl B. Smith, Wyncote, Pennsylvania; Albert J. Svoboda, Cicero, Illinois; C. V. Waddington, Wichita, Kansas; Miss Marjorie Ward, Minneapolis, Minnesota; and Albert E. Wilmarth, Attleboro, Massachusetts. J. V. K. Wagar of the Colorado State College, Fort Collins, represented The American Forestry Association. Medical officer was Dr. Lyman Hollingsworth of Boise, Idaho. Mr. and Mrs. Rich Thomson, Glenwood Springs, were in charge of packing.

TREES AND THEIR USES—No. 70—SCARLET OAK



Article of the Month

AMERICAN TUNG COMES OF AGE

By LYNN SWEARINGEN

Each month AMERICAN FORESTS presents as a special feature an article which has appeared elsewhere and which, in the judgment of the editors, is of outstanding interest from the standpoint of the information it contains. AMERICAN TUNG COMES OF AGE, by Lynn Swearingen, of the Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce, has been selected for November because of the revealing light it sheds on the future of the tung tree in America, particularly in view of interrupted vital tung oil imports from China. The article is reprinted in condensed form from "Domestic Commerce" for June 11, 1942.

THE South's tung-oil crop will bring nearly $4,000,000 in new wealth into that region in 1942 if production reaches the 10,000,000 pounds of oil some believe it may. There are indications that this optimistic forecast will be borne out, bringing America's comparatively new tung industry to its very peak of income, but still far short of its goal.

This new wealth owes its existence partly to our war with Japan, but not entirely. A few men have worked hard, and a few men have had some dreams; and from the few tung seedlings in America in 1905 have grown the 12,500,000 trees which form the United States tung belt, extending from Florida to Texas. But the trees in this belt are only a beginning, according to C. C. Concannon, of the Bureau of Foreign and Domestic Commerce, which has done much to encourage the rise and development of the industry in America.

Our consumption of tung oil since 1925 has averaged more than 100,000,000 pounds annually. The total jumped in 1937 to 175,000,000 pounds, representing a value of more than $20,000,000. During these years, our own contribution to the total never came to more than one-twentieth of it—failed even to get beyond 500,000 pounds until 1937. Our peak years have been the last two, when we contributed between 4,500,000 and 5,000,000 pounds.

What do these figures mean to the South's small farmer? They mean, in 1942 figures, a cash income of $80 to $90 per ton for the dried tung fruit delivered at the mill. With good luck, and no late frost, a tung grower ought to average a ton of fruit an acre from his bearing trees. If he had a plot of three acres, at present prices that would mean from $240 to $270 for each grower.

There are many such small growers now in the South, and their number is increasing. There ought to be 10,000 more; and an area of 1,000,000 acres in tung trees is not considered fantastic by those who know tung oil and its problems.

Look at it another way. Ever since American industry discovered the manifold uses of tung oil and its peculiar drying properties, China has been virtually our sole source of supply. Industries needing tung oil had their problems even before Pearl Harbor; but now China is almost cut off from us, our shipping problem is acute, and supplies have steadily diminished during the last four years.

Prices, reflecting these facts, have moved upward from fifteen cents a pound in 1938 in New York to forty cents in 1942. If a grower can get 320 to 330 pounds of oil from a ton of dried fruit at the mill, and bring home press cake worth, as fertilizer, an additional $15 to $18 a ton, he has made himself a tidy sum.

Usually, it is true, the grower finds it more convenient to sell his fruit to a local buyer; but one mill alone lists 345 farmers, who brought in varying quantities, large and small. The number of mills is increasing. This year there are at least eleven, where there were but seven in 1940. Prices for the fruit vary, depending on quality, but tung oil still means money in the pocket.

Tung oil—or Chinawood oil, as the trade calls it—is an essential raw material in a multitude of industrial operations. Since there is no satisfactory substitute, it does not depend on fickle taste. Instead, its consumption has been steady throughout the years.

All this sounds good, but it is essential to offer a word of caution. Speculators began to enter this new and profitable field a few years ago, and uninformed persons lost a great deal of money. The victims of various schemes were not aware that lands required for tung trees are cheap; that growing and setting out the young trees is not expensive; that trees will not grow on all types of land; and that tung growing, in general, has problems which require experience. So they rushed to invest, with the usual consequences. If the industry is to escape another such set-back, speculation ought to be discouraged.

The tung belt in America extends from the Gulf Coast back about 100 miles wherever the annual rainfall is thirty inches or more; but a rainfall of forty inches annually seems best. The western limit is about the ninety-eighth parallel in Texas—say, near Houston.

The trees need some cold weather, and they must lie dormant for a period during the winter. They are hardy after they reach maturity, and healthy, well-nourished trees will not die, even at zero temperatures. A late frost, however, even if not dangerous to the trees, may kill the blossoms. Thus, the critical period, as far as the grower's interests are concerned, is the time when the trees are in bloom.

The heaviest tree plantings in the growing belt are in Mississippi, Louisiana, and Florida; although Mississippi alone has three-quarters of the United States total of 12,671,344 trees. All are not bearing trees, of course—hardly a quarter, in fact. But of these, Mississippi has more than half.

Although the acreage planted to tung totals 175,000, some of this area is probably unsuited to the tree's best growth. It is difficult to tell whether particular trees which fail to bear well are victims of lack of care or of unsuitable soil. On the other hand, agricultural research has shown that soil and climatic conditions must be suitable for the trees—a fact which explains why uninformed speculation ought to be avoided.

Most people realize that by far the ma-

jor part of the tung-oil production goes to the paint and varnish industry, perhaps more than eighty per cent of it. But tung oil finds a variety of other uses wherever a good waterproofing is necessary—as in textiles (for raincoats and other waterproof articles), for waterproof concrete, as an exterior brick-coating, for coats, and even for fish nets. It is used also in the making of linoleum, in lithographic printing and printing inks, in insulating materials, in drawing inks, in soaps, in tanning leather, and at many stages of automobile manufacture.

Tung oil finds a variety of uses in fighting-force equipment. It is used, first of all, as a waterproof agent in coating the hundreds of military items, such as shells for army cannon, tank guns, rifle and machine-gun cartridges, and field guns. Government specifications, in fact, require waterproofing for these and other items. Tents are waterproofed; vehicle covers are given a waterproof coating; balloon outer covers must be impervious to water; and Army airplanes use great amounts of such material.

Navy airplanes also call for tung oil, particularly in the wiring and on the hulls, in order to resist water. In fact, any surface of the plane coming in contact with water is coated with tung oil, both because paint is too heavy and because tung oil provides the better seal. The Navy also uses large amounts of tung oil as spar varnish and for insulating materials.

The strategic importance of tung oil is clearly indicated by a Presidential order issued last January prohibiting use of tung oil except in defense orders having a priority rating of A-2 or better, when used in materials ordered by the Defense Supplies Corporation, or when used in connection with containers preserving food used in human consumption.

The last-named restriction is in line with a suggestion that tung oil be used as an inner coating for steel cans to replace tin, supplies of which are now virtually cut off by Japan. Indications are that tung coating for cans has passed the experimental stage, and that future uses will require increasing amounts of the oil.

The qualities of tung oil have already brought it into greater demand than any other agricultural product from the East. The total value of tung oil imported in 1940 reached more than $20,000,000.

Growing tung trees is not all velvet, as many seem to think. There are problems in growing the trees as well as in the preparation of the fruit for the mill and the oil for the market. Much research has been done on all phases of these problems, and growers and millers no longer imagine that all they have to do is wait for the fruit to fall and collect the money.

Experimentation has shown that trees will live and bear nearly twice as long in well-adapted soil as they will in poor soil. Acid soil is required, and good drainage is absolutely necessary. Of course, the trees require care, including fertilizing and pruning. But over a six-year period, one Florida grove produced an average of 1,900 pounds of air-dried fruit an acre, and in its best year it produced 4,000 pounds to the acre. Cultivation and care will do that.

The trees flourish on otherwise poor land. An effective growth can be produced on cutover land with annual applications of fertilizer. When one reflects that soil erosion is a perennial problem in the South, there appears the possibility of an erosion check in tung trees. Furthermore, some planters suggest the growing of leguminous crops, or even watermelons, between the trees—the legumes to enrich the soil, the melons to provide a secondary crop.

There is even the matter of air drainage to be taken into account. It has happened that blossoms on one plantation have been frozen, while those on an adjoining plantation showed no signs of injury. If the trees grow where air currents have a proper flow, apparently their blooms have better chances of survival, even with frost in the general area.

The actual planting of the trees and caring for them are matters for expert advice, but the questions which arise can be indicated briefly. Spacing of the trees presents a problem, although modern practice prefers to limit the number of trees to about eighty per acre.

Other planting problems concern the advantages of transplanting or direct planting; the actual preparation of the land; and weather problems, such as late frosts. Research continues into the problem of frost-resistant trees, and scientists at the University of Florida have discovered that they can control the dormant periods of experimental trees, which is another way of saying that the tree sap does not rise too much until the frost danger is past.

The tree grows rapidly, spreading low branches, but seldom reaches more than twenty or thirty feet in height, even at maturity. Its trunk may be from six to twelve inches in diameter, or larger, and pale gray bark covers soft, white wood. Rare trees attain a height of sixty feet, with canopies sixty feet in diameter; but many low-hanging branches call for frequent pruning.

The fruit, which drops from the tree in the late fall, looks like a russet apple. Occasionally it bursts open, exposing three, five, or seven seeds, which resemble smaller Brazil nuts. The seeds are the source of tung oil, which makes up about twenty per cent of the whole dried fruit; but in actual practice, only about seventeen per cent is obtainable, even by modern methods of milling.

American tung oil is almost colorless, neutral in reaction, odorless, and acid free. In these respects, it contrasts with Chinese tung oil, which may be decidedly acid, much darker in color, and may have a more or less earthy odor. The differences between the domestic and imported oils come about through superior American refining methods.

The trees do not seem subject to disease, strictly speaking, but they are attacked by a few parasites, all of which are under control. Trees may, however, be retarded in growth, or even killed, by unfavorable soil conditions.

From these soil conditions, the most dangerous result is "bronzing," a nutritional disease resulting from mineral deficiency. The leaves gradually turn bronze in color and curl along the edge. Zinc sulphate has been found to be a cure for this deficiency, and bronzing may be expected to grow less serious as a tree destroyer.

Other problems remain, however, one of which is the problem of preparation. Usually the fruit is simply left on the ground to dry; but if the season is rainy, drying is slow and difficult. Some growers believe that if the job could be immediate, rather than prolonged three or four months, they could get better oil production.

What does the future hold for this rising Southern industry? The acreage now allotted to tung trees probably does not exceed 175,000, and 1,000,000 acres may be developed. Even a smaller acreage would give the South a third crop, and would diminish the dislocations which result from too much dependence on cotton and tobacco. Diversification of agriculture, already having made headway, would come closer to realization and would bring a more balanced prosperity.

Much waste land could be put to use, including cut-over timber areas, and eroded soil could be partially reclaimed. But the widest benefit tung could bring, say many planters, is that of crop variety and diversification. For a small grower to go to the other extreme and depend on tung entirely would be as bad as present dependence on one or two crops. Expressed opinions concur in suggesting groves of two to four acres, which would call for a minimum amount of labor by the planter and would result in a steady new source of cash income.

There is no apparent reason why tung-oil production in the United States should not fill a large part of our domestic needs. The industry is growing; and from 1930, when there were 351,000 trees, to 1940, when there were 13,000,000, only a decade intervenes. Perhaps the hopes of the optimists who foresee here a great new industry are not wholly unfounded.

OCD NAMES STATE FOREST FIRE COORDINATORS

STATE coordinators for the Forest Fire Fighters Service of the Office of Civilian Defense have been formally appointed in twenty states, the OCD announced on September 21. David P. Godwin, assistant chief of Fire Control, United States Forest Service, Washington, D. C., was recently named national coordinator.

State appointments were as follows: Arizona, F. Lee Kirby, supervisor of the Tonto National Forest, Phoenix; California, Wallace I. Hutchinson, assistant regional forester, United States Forest Service, San Francisco; Colorado, Allen S. Peck, regional forester, United States Forest Service, Denver; Connecticut, Austin F. Hawes, state forester, Hartford; Delaware, W. S. Taber, state forester, Dover; Idaho, Franklin W. Girard, state forester, Boise; Illinois, Anton J. Tomasek, state forester, Springfield; Indiana, T. E. Shaw, acting state forester, Indianapolis; Louisiana, Massey H. Anderson, state forester, New Orleans; Maryland, Joseph F. Kaylor, state forester, Baltimore; Massachusetts, Raymond J. Kenney, state commissioner of Conservation, Boston; Minnesota, Anson E. Pimley, forester in charge of Fire Control for the state, Minneapolis; Missouri, George O. White, state forester, Jefferson City; New Hampshire, John H. Foster, state forester, Concord; New Mexico, Edward P. Ancona, United States Forest Service, Albuquerque; New York, W. G. Howard, director of the State Division of Lands and Forests, Albany; Ohio, John A. Bastion, Ohio Division of Forestry, Chillicothe; Pennsylvania, George H. Wirt, Pennsylvania Department of Forests and Waters, Harrisburg; Utah, Paul M. Dunn, chief forester-fire warden for the Utah Board of Forestry and Fire Control, Logan; and Wisconsin, E. J. Vanderwall, Wisconsin Conservation Department, Tomahawk.

These men were nominated through the cooperative recommendations of the various federal, state and private protection agencies and state and regional OCD officials in their respective states.

Following a like procedure, the state area coordinators will consult with the interested protection agencies and OCD officials within the state to select local coordinators for administration of the FFFS in county and other local units. On completion of the state organization framework of FFFS, the state area coordinators will work with the state directors of Civilian Defense to develop procedures for OCD recruitment and enrollment of volunteer fire fighters. Certificates of membership, identification cards, and armbands will also be provided. State area coordinators will initiate training programs to be carried out under the direction of federal, state and private forest officers, and will arrange with the protection agencies for procedures to mobilize local units of the FFFS for action.

Enrollment and organization of volunteer fire fighters is expected to proceed rapidly, particularly in the East and South, to provide operating units ready for action during the fall and early spring fire seasons. One of the first FFFS units to be formed in the East is already being organized at Blue Ridge College, New Windsor, Maryland, where the entire student body and faculty of the college have volunteered for fire fighting service.

It is expected that state area coordinators for all the "forest states" will be selected within the next few weeks. Regional and state training manuals are being prepared. During August, National Coordinator Godwin held joint meetings with federal, state and private protection agencies and Civilian Defense officials assembled at Albuquerque, San Francisco, Portland, Missoula, Boise, Salt Lake City, Denver, and Milwaukee. It is expected that he will meet with forestry and OCD officials in the eastern and southern states in the next few weeks.

During the summer fire season in the West, forest protection officers report, it has become apparent that the shortage of forest fire fighters is becoming greater, and that without the aid of civilian mobilization, serious situations could arise.

RESTORING ALASKA'S INDIAN TOTEMS

By B. FRANK HEINTZLEMAN

AS FAR back as the turn of the century students of Alaska Indian culture were deploring the rapid disappearance, through decay and neglect, of the unique totem poles formerly carved by the Haida and Thlinget Indians. It was not until 1937, however, when the CCC was extended to include the Alaska Indians, that a practicable way was found to do something about it.

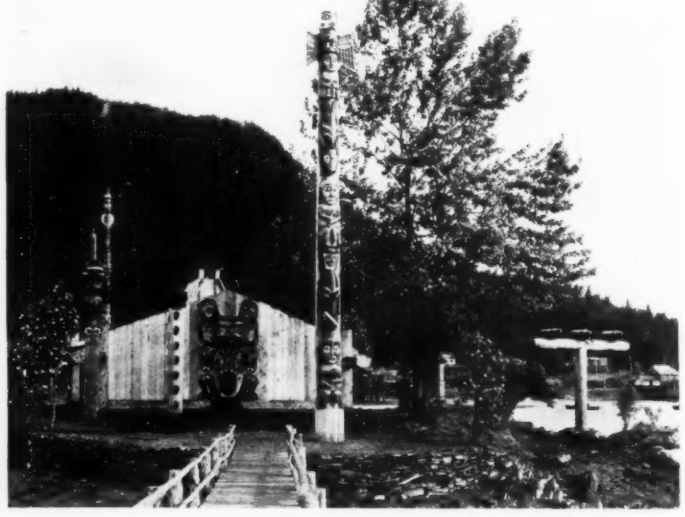
By that time hundreds of poles and dozens of the huge and highly ornamented community houses had passed entirely out of sight, or were hopelessly beyond repair. By careful search in the brush and grass cover of abandoned villages and by painstaking care in handling, about 110 poles, standing and fallen, and in all stages of decay, damage from brush fires, and mutilation by vandals, were recovered for restoration. Important poles too far gone to permit of restoration were identically duplicated.

Every old pole that could be found was first photographed in detail, the site on which it stood carefully recorded, and its ownership determined. Then followed the tedious and diplomatic job of getting all of the numerous and widely scattered members of the family group which owned each pole, to assign their individual interests to the federal government. It was only then that public funds could be expended on restoration work. After this came the collection of information on the history of the pole, including the year it was carved, the name and family connection of the original owner and the occasion—such as the completion of a chieftain's house—that brought about its erection. This often involved intensive ferreting, but it was as child's play compared with the next step, the intricate research work required in compiling texts of the legends, myths and historical incidents, or the significance of the heraldic designs that are portrayed in the carvings.

Dr. Viola Garfield, anthropologist of the University of Washington, who has specialized on Northwest Coast Indians, was appointed to head up this historical study in collaboration with members of the U. S. Forest Service staff in Alaska. Family history transmitted from generation to generation by word of mouth was sought from the oldest Indians, and local historical libraries were searched for early-day magazine and newspaper articles, with illustrations and quoted Indian stories, on totem poles. Material was gleaned from the reports of Alaska ethnologists and anthropologists on file in federal offices in Washington, the Alaska Territorial Library and Museum, Congressional Library, and other similar sources of ethnologic data.

In these ways the historic material on the erection of the poles and the stories told by the carvings were obtained. A vast amount of conflicting information came in, even from the Indians most closely associated with the poles, and this had to be untangled before the story could be approved.

The actual restoration work had two objectives: First was to restore the poles with such a high degree of authenticity that ethnologists and anthropologists could continue to use them as material in the study of Alaska Indians; second, to use the work as a means of awakening the interest of the young generation of Indians in the almost forgotten art of carving, and to give them training in that art. The skilled trade thus acquired would broaden the field of these young men for gainful employment.



Restored community house and totems at Wrangell

The actual carving was done by men who were sympathetic with the project. Old Indians who retained a knowledge of the art of totemic carving from earlier times, were sought out and placed in charge of the job as skilled workmen. These men acted as foremen and teachers for crews of younger Indians, totaling at times 150, who did the manual work on the poles.

Indians of the Haida tribes restored or duplicated the old poles of Haida origin and Thlinget Indians worked on Thlinget poles. Whites only provided general direction for the work. Many of the huge cedar poles, stripped of bark and sapwood, are four feet in diameter and range from forty to sixty feet in height. Both the old carving instructors and the young Indian CCC boys became intensely interested in the work. In many cases boys whose forefathers had carved a pole a number of generations ago helped to restore the same pole.

The original carving had been done with special types of native adzes and odd-shaped knives. Tools of like kind were fashioned by the Forest Service for use in the finishing work on the restored poles in order that the new surfaces would be identical with the old. A policy of using no iron nails or bolts in the restoration work was adopted.

Only two community houses could be found that were of such strictly primitive type as to justify restoration.

In addition to the carving, the details of the painting of the totem poles were important. The Forest Service began this task by obtaining paint minerals from local deposits known to the older Indians. The Indians then chewed salmon eggs, and the spittle obtained from this operation was placed in a stone mortar and ground with the minerals to get the desired colors. This method of paint preparation was all right for a few poles, but was too slow to be practicable. So the proper color pigments were purchased and an expert mixer carefully matched the Indians' original color values in the carving sheds.

TREE THAT OWNED ITSELF IS DEAD

THE tree that owned itself is dead. According to a newspaper dispatch from Athens, Georgia, where the great oak stood, surrounded by a brick wall, at a busy street intersection, the tree collapsed without warning on the night of October 8. Investigation revealed a vast hollow inside the trunk, the ravages of age and decay.

The famous oak, known as "The Tree That Owns Iself," was unique in that there was willed to it by its owner, William H. Jackson, father of the late Chief Justice James Jackson of the Supreme Court of Georgia, "for and in consideration of the great love I bear for this tree and the great desire I have for its protection . . . entire possession of itself and all land within eight feet of the tree on all sides." The deed, dated 1820, is recorded in the Clerk's Office at Athens.

According to Rolfe Edmondson, a Georgia newspaper writer, the tree severely handicapped traffic at a street intersection, but no legal action was taken to condemn it and the property. Legal authorities questioned by the curious who sought an interpretation on the point of law brought up by the tree being in the street, he said, expressed the opinion that no court in the land had the right to order it destroyed.

"By title duly drawn and duly conveyed," an eminent jurist once said, according to Mr. Edmondson, "the tree owns the land on which it stands, and it can be destroyed only by an act of God, and only God can make a tree."

STAUFFER NEW STATE FORESTER OF ALABAMA

JACOB M. STAUFFER, assistant state forester, has been appointed state forester of Alabama, it was announced October 1 by State Conservation Director Albert W. Gill. He succeeds Brooks Toler who resigned early in September to become forester for the Southern Pine Association.

Mr. Stauffer has been associated with forestry work in Alabama for sixteen years, first coming to the state in 1926 as forest inspector for the old State Commission of Forestry. Previous to this he had served as assistant district forester for the Pennsylvania Department of Forests and Waters. He is a graduate of the Pennsylvania State Forest School.

Mr. Toler, who took over his new duties with the Southern Pine Association on October 1, was affiliated with the American Forestry Association in 1929 and 1930 on its Southern Forestry Educational Project. Following this he served as extension forester for Mississippi and, in 1939, was appointed state forester of Alabama. Mr. Toler is a graduate of the Louisiana State University's School of Forestry.

THE GASOGENE COMES TO WASHINGTON

THE National Capital will shortly have its first sight of an American made automobile propelled by wood gas instead of by gasoline. Two American made trucks are due to arrive in Washington late in October from Madison, Wisconsin, where the Forest Products Laboratory has equipped them with wood gas generators redesigned from types widely and successfully used abroad. The trucks will make the eight hundred mile trip on wood gas as a demonstration of the adaptability of wood as a substitute for gasoline in the operation of automobiles.

This adaptability is nothing new to the people of Germany, France, Italy, Sweden and Norway where the shortage of gasoline has forced the development of so-called gasogene automobiles to the extent of making them now the common type. Over a half million wood-propelled passenger cars and trucks are today in operation in these countries and the number is increasing.

It is said that there is more in the Madison Laboratory's designing of an American wood gas generator than mere demonstration of its feasibility in that it has war use application by some of the Allied nations facing gasoline shortages. China, for example, is reported to be considering the manufacture and use of trucks powered by wood gas and if the demonstrations in question prove all that is claimed for them that country may rely on them in a large way to break the Japanese blockade of gasoline.

The principle of the gasogene automobile is based upon the carbonization of wood or wood charcoal from which is derived a gas having propelling powers similar to genuine gasoline. Wood gas generators, therefore, take the place of the ordinary fuel tanks and are mounted on the side or the rear of the automobile. Fueled with charcoal or wood chips they generate a mixture of carbon monoxide and dioxide similar to that produced by gasoline.

GUIDE TO THE APPALACHIAN TRAIL IN MAINE. The Maine Appalachian Trail Club, Inc., Washington, D. C. 600 pages, 300 maps. Price $2.50.

This Guide describes much of the finest of Maine's beautiful woods and mountain country, for the Appalachian Trail begins at Katahdin and winds southwestward through 266 miles of the central Maine wilderness to the Maine-New Hampshire line, near Gorham, N. H. It thus traverses the forest and lake region south and west of Katahdin, and this volume — the Fourth Edition of the Guide — is the most comprehensive yet issued of the region, so popular with hunters, fishermen and lovers of the outdoors. A new feature of this edition is its loose-leaf form, for while it is a very compact book, bound in simulated leather and stamped in gold, the pages are removable so that only the sections and map for the section to be visited need actually be carried on a trip. A "must" for the lover and frequenter of the Maine woods.

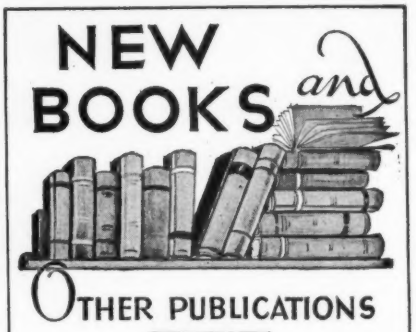
A STUDY OF THE PARK AND RECREATION PROBLEM OF THE UNITED STATES, by the U. S. Department of the Interior, National Park Service. Printed by the U. S. Government Printing Office, Washington, D. C. Illustrated. 279 pages. Price, $1.25.

This large and well illustrated book deals with the problem of public outdoor recreation as directed by city, county, state and federal governments. In six chapters, the book discusses recreational habits and needs, aspects of recreational planning and present public outdoor recreational facilities, as well as the administrative, financial and legislative side of the problem. Many pages of the book are given over to state maps which show the locations of existing and proposed recreation areas — except municipal ones — within the state. Accompanying each map there is a diagram showing the number of acres and population of the state.

Recreation is an important factor in maintaining morale and good health — now so vital to our national defense. Since land is essential to recreation, land acquisition deserves consideration even during the war period.

PLANT ECOLOGY, by Dr. W. B. McDougall. Lea and Febiger, Philadelphia, Pennsylvania. 285 pages, illustrated. Price $3.00.

This is the third edition of a valuable book, and reflects the results of the most recent ecological research. Based on a course of lectures given by the author for several years at the University of Illinois, every effort has been made to keep it concise and readable and at the same time thoroughly comprehensive.



A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

DESERT WILD FLOWERS, by Edmund C. Jaeger. Stanford University Press, Stanford, California. 322 pages, illustrated. Price $3.50.

Seven hundred and sixty-four desert plants are described and illustrated in photographs or line drawings in this revised edition of the most complete work ever published on the flora of the far Southwestern American deserts. Dr. Jaeger knows these deserts intimately, and has spent many years in their study, always with sketch-book and pencil at hand. This second edition includes a key, which will be a valuable aid in identification.

AMERICAN PLANNING AND CIVIC ANNUAL —1941, edited by Harlean James, American Planning and Civic Association, 901 Union Trust Building, Washington, D. C.

This is the most recent record of civic advance in the fields of planning, parks, housing and neighborhood improvement, including important papers delivered at the national conferences in Philadelphia and Illinois.

DIGEST OF LAWS RELATING TO LOCAL PARKS AND RECREATION, by Roy A. Vetter. Federal Security Agency. Superintendent of Documents, Washington, D. C. 534 pages. Price $1.00.

This digest is the result of an effort to bring together in a single volume an abridgement of the general laws of the several States and Territories relating to local parks and recreation, as of 1940. It is intended to furnish source material for research in reference work to laws relating to the subject matter, — since parks and recreation have now such an important status in our national life.

YOUR OREGON — Yesterday, Today, and Tomorrow, by John B. Woods and Nelson S. Rogers. Northwest Regional Council, Portland, Oregon. 219 pages. Illus. Price $1.55.

"Your Oregon," written by two well-known foresters, strikes a new high in conservation textbooks for classroom use. Prepared especially for children of the eighth grade level, it nevertheless is adapted to children both below and above that level. From a classroom standpoint the book has the redeeming feature of dealing with natural resources not as inanimate things but as parts of human life. In lucid and interesting style it unfolds a picture of the physical environment of Oregon, of the people who made the state and the people of today who are endeavoring to continue to develop along progressive lines.

What the authors set out to do is well stated in their foreword: "Oregonians have pioneered in making their government responsive to change and progress. They and their government, working together, must create a favorable environment for orderly industrial progress, and for the conservation and wise use of all resources, including the human. A first step in such a process is to acquaint our people with many essential facts. It is desirable to make these facts available, in attractive form, to young Oregonians, since they will become tomorrow's planners and doers."

The authors have well succeeded. Their text and form of presentation were prepared in close cooperation with teachers, publishers and authors and the chapters were tested as to content and readability by submission to classrooms for children to read. Already the book has been adopted by Portland schools. Naturally it deals with Oregon but its wealth of information and its pattern as a conservation text make it of interest and value throughout the field of education.

CONE-BEARING TREES OF THE PACIFIC COAST, by Nathan A. Bowers. Published by Whittlesey House, New York. Illustrated. 169 pages. Price, $2.50.

In all North America there is no other section where so many species of the conifers can be found than along the Pacific Coast and along the mountains of the far West from southern Alaska to southern California, and probably never before has there been a book written that offers a more complete coverage of Pacific Coast conifers.

A small, handy book, it serves as an aid to identification of species, contains also a key to needles, to elevation, and a geographical key, and each species is represented by a compact description together with photographs and drawings of the full tree, the bark, cones and foliage.

WOOD TECHNOLOGY, by Harry Donald Tiemann. Published by the Pitman Publishing Company, New York. 316 pages, illustrated. Price, $3.50.

All phases and processes and the many uses of wood are discussed in this book. Significant material is provided on the mechanical, physical and chemical properties and on structure. Wood anatomy, wood physiology, timber physics, wood chemistry and timber mechanics are among the classifications treated. An identification key is featured in the abundant original material, numerous useful tables are provided in the appendix and references for more intensive reading on specific wood subjects are given at chapter endings. The author is senior wood physicist, of the U. S. Forest Products Laboratory, Madison, Wisconsin.

FOREST MENSURATION, by Donald Bruce and Francis X. Schumacher. Published by McGraw-Hill Book Company, New York. 425 pages, illustrated. Price, $4.00.

Second edition of this valuable volume in the American Forestry Series, bringing the subject of forest mensuration up to date. The underlying thesis of the book is the fact that standing timber or the growing stock of a forest constitutes the chief capital investment of forest business and that successful management of this capital lies at the basis of profits. Deals with the practical problems of management of forest properties in the United States, presenting the material in a clear manner and using illustrative material in case form wherever possible. The same basic data have been used for the technical and financial discussions, thus clarifying the financial results which follow upon technical management practices.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

Diseases of Forest-Tree Broadleaf Nursery Stock, by W. C. Davis, George Y. Young, Dennis H. Latham, Ernest Wright, Howard Lamb and Carl Hartley. Civ. Cons. Corps, U. S. Dept. of Agr., Wash., D. C.

Status of Official Instructions for Assessing Forest Land, by Alf Z. Nelson, Associate Forest Economist, Forest Taxation Inquiry, Forest Service, Wash., D. C.

Park Use Studies and Demonstrations. Nat. Park Service, U. S. Dept. of the Int. Supt. of Docs., Wash., D. C. Price, 20 cents.

Abstract of Fur Laws, 1941-42. Wildlife Leaflet 199, Fish and Wildlife Service, U. S. Dept. of Int., Wash., D. C.

Forest Resources of Portage County, Ohio, by William C. McMaster. Ohio For. Survey Report No. 9. WPA in Ohio, cooperating with U. S. For. Serv. Ohio Agricultural Sta., Dept. of Forestry, Wooster, Ohio.

Long-Range Programming of Municipal Public Works. A Report of the Public Works Committee to the National Res. Planning Board. Supt. of Docs., Wash., D. C. Price, 30 cents.

Northern Rocky Mountain Forest & Range Experiment Station Annual Report for 1940. U. S. For. Serv., Missoula, Mont.

Suggestions for Appalachian Trail Users. Pub. No. 15, issued by The Appalachian Trail Conference, 1624 H St., N. W., Wash., D. C. Price, 25 cents.

CONSERVATION CALENDAR

Important Bills in Congress With Action
September 4-October 9, 1942

BILL ENACTED

S. 2775—DOWNEY—Expansion of program relating to planting of guayule and other rubber-bearing plants. Passed Senate September 21, 1942. Passed House October 8, 1942.

FISH AND WILDLIFE

S. 2784—HAYDEN—To revise the Alaska Game Law—Introduced September 17, 1942. Referred to the Committee on Territories and Insular Affairs.

INDIAN AFFAIRS

S. 2843—SHIPSTEAD—To authorize the Secretary of the Interior to purchase logs, lumber and other forest products. Introduced October 9, 1942. Referred to the Committee on Indian Affairs.

NATIONAL PARK

H. R. 6657—JENNINGS—To authorize the acceptance of donations of land for the construction of a scenic parkway to provide an appropriate view of the Great Smoky Mountains National Park from the Tennessee side of the park. Passed House April 20, 1942. Reported without amendment (No. 1623) by the Senate Committee on Public Lands and Surveys September 28, 1942.

THE CONSERVATION WAR FRONT

(*Continued from page* 511)

to House amendments of Senator Downey's bill (S. 2775). Not only will the President's signature on this bill increase from 75,000 to 500,000 acres the area the U. S. Forest Service may plant to guayule and other rubber-bearing shrubs, but it will also authorize the government to acquire water rights, administrative sites and additional land for nurseries.

This greatly increased program is made possible by a surplus of guayule seed now on hand. Instead of the 20,000 pounds thought available, the Forest Service reports that 32,000 pounds have been obtained. From these, and from seedlings now growing in California nurseries, it is expected that 208,000 acres will have been planted to guayule by the spring of 1944. Thereafter, stock for 176,000 acres can be grown annually.

If these plans are carried out, the Forest Service predicts, rubber production from guayule, which will amount to 600 tons this fall, should rise to 33,000 tons in 1944 and 47,000 tons in 1945. After this, if a sustained annual planting program of 176,000 acres is carried out, and the shrub is harvested at the end of two years' growth in the field, it should result in the production of about 80,000 tons of rubber annually.

In the expansion program it is planned to use both irrigated and dry land for planting. For the present, however, the greater part of the acreage will be confined to irrigated land since this produces more rubber. In general, planting will be expanded in the coastal valleys of southern California, though eventually adaptable lands known to exist in Arizona, New Mexico and Texas will be included.

Expansion of the guayule program was advocated by the President's Rubber Survey Committee in its report of September 10. While expressing belief that estimates of rubber to be thus acquired were over-optimistic, the committee advocated removal of any restriction as to the area to be planted, terming the project "inherently sound." It furthermore recommended that the War Production Board grant adequate priorities to secure the farm equipment required to prepare the land and plant guayule seed. "This," the Committee said, "must be done promptly to meet the fall planting season."

SPRINGS OF WOOD

BEDSPRINGS in which wood replaces all the metal formerly used save from twenty-five to one hundred pounds of steel apiece for ships, tanks and munitions.

Invention of research engineers at the School of Design in Chicago, the springs have been put in production by a Chicago manufacturer. Made in several types, some replace steel springs in furniture upholstery.

Instead of steel springs held in position with cloth straps, the new springs are made entirely of resin-bonded waterproof plywood hinged with cloth straps glued to the wood with the same waterproof adhesive used in laminating the plywood. For making box springs, the plywood is cut into four by four inch squares, hinged together in an accordion-like, zigzag design. The plywood squares are sprung apart with small triangular blocks, also glued into position. Laboratory tests have found that these resin-bonded springs will not come unglued after total immersion in water for a month.

Laboratory testing machines which subject the springs to the equivalent of ten years' wear in a few hours, produced the astonishing finding that the spring quality of the wood springs was actually greater than that of steel. The reason was found in a fact previously established by airplane designers. Wood is not subject to the "fatigue" which affects metals, because wood does not crystalize under rhythmic stresses and strains.

The wood spring can, like metal, lose its "springing" quality under excessive use; but the "unsprung" wood will regain its resiliency in a day. One of the wooden springs was entirely flattened by the long ordeal of a testing machine and laid aside. The next morning it had resumed its shape, according to the test engineers.

Plywood springs now in production range in spring power from less than a pound, for cushions, to fifty pounds for heavy furniture springs. Nearly sixty types of springs were devised and tested before the "V" accordion type was decided on for first manufacture. Tested and ready for production, however, are spiral wooden springs; and an "X" type, somewhat reminiscent of wooden coach springs, for very heavy duty.

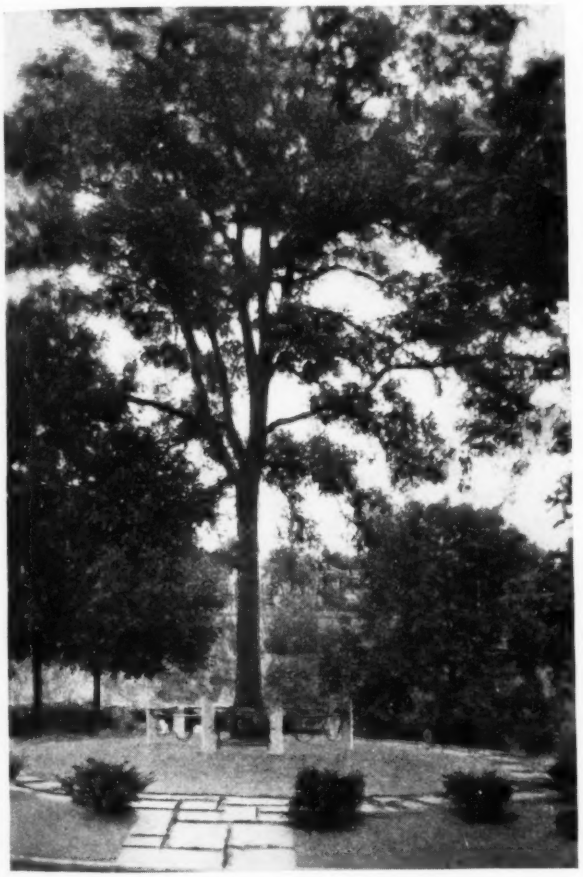
Wood bedsprings are the result of five years of research at the School of Design in Chicago. Head of the school is Lazlo Moholy-Nagy, former chief of the Bauhaus Designing Institute in Germany. There one of his developments was the tubular steel furniture which had a tremendous vogue in this country as well as abroad. When the Nazis came to power, Mr. Moholy-Nagy left Germany in protest, and established his school. The inevitable need he foresaw for metals in the world war turned his attention to wood as a replacement material. — ELRICK B DAVIS.

THE GARFIELD OAK

By JULIETTA K. ARTHUR

A CURIOUS historical note in the ancient conflict between the Teutons and the Celts is repeated in the story of the "Garfield Oak" planted sixty-one years ago in memory of the martyred President.

Two months after the assassination of President James A. Garfield by the unbalanced French lawyer, Guiteau, a little band of Germans, residing in the Eastern District of Brooklyn, New York, formed the "James A. Garfield Oak Association."



The Garfield Oak—planted on November 13, 1881, in honor of the martyred President

On November 13, 1881, they met at Cypress Hills Cemetery to plant a white oak in memory of their President. The occasion was made a city-wide memorial meeting. With the little group of Germans marched twelve hundred men to that part of the cemetery still known as the "National" Cypress Hills Cemetery. On a little mound overlooking the graves of soldiers of the Revolutionary and Civil Wars a specimen of *Quercus alba,* now about sixty feet high, still stands. Newspaper accounts of the day give full details of the semi-military ceremonies. Included in the procession were members of the Grand Army of the Republic, the Sixteenth Ward Battery, one hundred men and two guns from the *Germania Schuetzenbund,* cadets, soldiers and sailors. Orations were delivered in both English and German, and when the oak was planted a salute of twenty-one guns was fired by the Sixteenth and Nineteenth Ward Batteries. The ceremonies ended with a dirge by the band and the *Saengerbund.*

Today, this representative of the white oak family is important, not in itself, but for what it represents. The tree has suffered and its lower branches were lopped off so that it is not as impressive as younger and less interesting specimens nearby, overlooking graves of Civil and World War veterans.

Passers-by, strolling through the shaded walks of this national cemetery, are not apt to pay attention to Garfield's Oak, even though it is preserved from further injury by heavy iron chains, linked to cement pillars, standing two or three feet high, making a space about five feet in circumference on the top of the little hill reserved for the oak.

The planters were either modest, or the ways of plaque-makers different than in 1941, for on the little iron gate, now painted green, there are only these words, "Erected by JAG Ass'n, Nov. 13, 1881." The pillar on the left of the gate bears this inscription imprinted in the cement: "James A. Garfield, Shot, July 2, 1881," while on the right a companion pillar says "James A. Garfield, Died, Sept. 13, 1881."

WAR ON THE WOLF

(*Continued from page* 495)

ginia legislators passed laws looking to the extermination of wolves. Twenty-six of these were enacted during the colonial era, and the others after statehood was attained. In numerous instances the regulations were set up for particular counties or groups of counties. During the last hundred years, as one would suppose, the bounties applied chiefly to the western parts of the state in the Blue Ridge and Allegheny regions.

Though special regulations for different counties were common, in 1810 the legislature decided that it should "be lawful for every county to allow such reward as the necessity of the case may require." Thus permissive bounties became statewide. Except for one seven-year period, the expense of bounty payments was borne by the county where the wolf was taken.

It was in 1683, a half century after Massachusetts and Virginia had legally organized against wolf depredations, that New York and Pennsylvania adopted bounty plans. New York began by offering twenty shillings for each wolf killed on Long Island, though other sections were soon included and the tribute increased. From 1683 to 1898, regulations regarding bounty payments on wolves were adopted by the State legislature or the Colonial Assembly on sixty different occasions. At least twenty-five such laws were given trial by the Colony before 1776, the amounts offered for each wolf varying from six shillings to $40.

Attempts at fraud and trickery in connection with bounty payments were frequent, not only in New York but in the other colonies as well. As an example of this, one authority writes:

"A man by the name of Ellsworth once made a pit-fall with a bait or decoy upon it. * * * On the morning of a town-meeting he found in it a she-wolf with six whelps, supposed to have had their birth after the bitch had fallen in. He left them where he found them and went to the town-meeting, where he made an animated discourse upon the mischievous depredations of these animals; stated in glowing colours the losses and the terrors of the farmers and finished by proposing a bounty such as might encourage some enterprising spirits to devote themselves entirely, and with zeal, to their destruction. His eloquence was popular and successful. The bounty was doubled; next morning he went with a neighbor to examine his pit-fall and taking the seven scalps claimed and received for each, the augmented recompense."

Pennsylvania, under William Penn, offered a bounty of ten shillings for a dead wolf, but it is evident that this action was not sufficient to cope with their depredations. As a consequence, in 1705, twenty-four years after Pennsylvania became a colony, the early lawmakers legalized the employment of professional wolf hunters, their fee to be raised by taxation of the people. This is believed to be the first such provision in North America.

These hunters, many of whom were picturesque characters, devoted all of their time to wolf killing as required by the law. Their efforts during the seventy-odd years their employment was provided for had much to do with the wolf's eventual elimination from that state.

Thus during the crucial pioneering period along the Atlantic seaboard, did the North American wolf war get under way in earnest. It continued into the early part of the twentieth century with thirty-nine states and territories sanctioning bounty laws. By 1937 only Alaska and twelve states offered tribute for wolf killing, mainly because the animal had disappeared from much of its original habitat. Canada, in 1940, also repealed the wolf bounty in the Northwest Territories, although most of the provinces still have bounty laws, as do several of the Mexican states.

But between 1705, when Pennsylvania employed the first wolf hunter, and 1937, when the wolf was becoming a rare creature, there is a long and bloody trail—a trail that led across the Mississippi onto the Great Plains, over the Rocky Mountains and finally into the domain of the Far West. It is a trail blazed with rifles and set guns, wolf pens and pits, wooden and steel traps, snares and strychnine — particularly strychnine. And it is a trail littered with the bleaching skeletons of sheep and cattle, for the wolf, grown more wary as hunters, trappers and poison crews pressed him on every side, fought back savagely to the bitter end.

(In the December issue Mr. Young will follow the wolf war westward.)

WOMEN IN THE WOODS

(*Continued from page* 498)

jobs. Offhand, most industrialists say that part-time work should be confined to non-defense work. Women, they say, can get part-time jobs in stores and driving buses, thus freeing full-time workers for factory jobs. In war plants, they feel, the extra shift changing would cut down production and only add to transportation problems.

What will happen to women in the lumber industry after the war? Will the returning soldiers be able to get their jobs back? Will the girls who have had a taste of good pay and independence be willing to return to the kitchen?

Not much attention is being given to this problem yet. The job at hand is to get women to work. Most lumbermen feel the future will take care of itself. The girls aren't talking much about "after the war" either.

Whether the lumber industry continues to be "coed" after the war will depend to a considerable extent on the demand for lumber in the reconstruction program. If the government stresses mass production of housing as a way of tiding the nation over a post-war depression, the industry may be kept going at full tilt, requiring the services of both men and women.

Numerous women workers are already saying they will be ready to go back to housekeeping when the war is over. Those whose husbands are flying airplanes in China or driving tanks in Libya make no predictions. It is too early for them to tell whether they will have to continue making their own living.

"I'd be perfectly willing to go back to housekeeping if I could have my husband back home again," one Army wife lumber sorter declared.

Mills that discover that women can tie lumber more quickly than men and sort it more accurately because of their patience may follow Weyerhaeuser's example of peacetime employment of women in some departments.

Right now lumber production is face to face with a shortage of manpower. There is no question whether women should or should not be working in lumber mills and with logging crews. Somebody has to get the lumber out for barracks, gliders and ships and there aren't enough men to win the war and the battle of production too. Total war has brought women into "tough" jobs.

FEET IN THE EARTH

(*Continued from page* 504)

roots and one tree may grow into a forest covering many acres. The mangrove also has a root which grows upward out of the water to breathe for the roots under water. This same type of growth is found on the cypress tree of the southern swamps. It is not a true root, however, but a root appendage which is a wooden lung of the tree.

The man-root of western United States is only a few feet high, but it produces a root roughly the size and shape of a human being. This huge root acts as a reservoir to store water for the small bush of purple flowers growing above it. The man-root belongs to the same family which produces watermelons, cucumbers and gourds, all above the surface of the earth.

The joints of sugar cane stalks are made to act as roots. The stalks are laid in cultivated rows and covered over with earth. From each of the joints a new stalk of sugar cane with a complete root system will sprout.

The roots of those plants known as legumes have the ability to enrich the soil. Nitrogen is collected by the root system and stored in tiny nodules. When the woody structure of the root has decayed, free nitrogen is left in the soil.

The roots of a plant will usually concentrate where an abundance of food is located. A few years ago an Augusta, Georgia, judge planted camellia japonicas under an open pine forest in his yard. To insure a hardy and healthy growth for his flowers, he prepared a hole several feet in depth and three feet wide for each of his plants. Into these holes he poured a rich mixture of fertilizer and dirt. A few months after the flowers were planted they began to die. The judge dug up several of them to investigate the reason and found the holes choked with roots from the nearby pines. A million tiny mouths from the trees were strangling the roots of the flowers.

Where competition for food and water is keen in the forest, the trees send their feeder roots back to the surface to catch the first water falling on the forest floor and to take up the food material in the decaying debris on the surface of the ground. Because of this, the root systems of forest trees are shallow. Usually when the deep, strong-rooted trees on the edge of the forest are removed, the first wind storm rips up the shallow-rooted trees of the woodland depths and hurls them to earth.

Plant roots are important to everyone. As food, as medicine and as a means of holding the earth together, they are valuable. As tiny mouths securing nourishment for trees and other plants, they are a necessity. Yet most of us who do not live close to the soil never realize what an important role plant roots have played in the development and progress of the human race.

GREEN GUARDS

(*Continued from page* 508)

enough to check with them and find out if they are doing everything possible for the prevention of fire and the protection of our national resources."

In order to keep up the initial enthusiasm of the guards, various plans have been worked out by the state leaders. A group is to be shown around the state forest nursery and there will be demonstrations of how fires start from matches and burning cigarette stubs.

During August and September, a "Keep Oregon Green Fire Prevention Contest" was staged. For the ten boys and ten girls submitting the best entries, a three-day camping trip in the Cascades was offered. The Green Guard squad which had the largest percentage of its members entered in the contest and whose records showed the best work in fire prevention received a similar trip. In awarding prizes, twenty-five per cent rating was given to a 200-word letter describing the member's work, while seventy-five per cent was rated on duties actually performed.

Left, right. Left, right. Put your shovels away now little Green Guard No. 1—and you No. 5,001. School bells are ringing. Next spring you will again be one of Uncle Sam's soldiers.

ALL-WOMAN FOREST CREW

California has an all-woman forest fire fighting crew, the first in the history of the state, according to a recent press dispatch. The crew, employed by the State Division of Forestry at Alma, consists of a woman foreman, a woman truck driver, a woman assistant truck driver, women fire fighters and a woman cook.

WHO'S WHO

Among the Authors in This Issue

JOHN L. BLACKFORD (*"Thy Woods and Templed Hills"*), native of Montana, outdoorsman and lover of the wilds, writes poignantly of America's great heritage of land and sea, which her sons—as of old—are fighting finally to hold forever free.

STANLEY P. YOUNG (*The War on the Wolf*) has long been connected with the wildlife work of the Government. His early experience included as well mining, exploration and cattle ranching. Holding a degree in biology from the University of Michigan, he became predatory animal hunter and eventually director of all control work for the Biological Survey, now the U. S. Fish and Wildlife Service. His writing stems from long, intimate study of the ways of predators, with particular reference to American wolves.

MARY HORNADAY (*Women in the Woods*) comes from a family of writers. Her father was Washington correspondent of the Indianapolis *News* for over thirty-five years, and her brother is on the staff of the Buffalo *Evening News*. A graduate of Swarthmore College, she is a member of Phi Beta Kappa and since graduation has been on the staff of the *Christian Science Monitor*. Former president of the Women's National Press Club, she is a member of The American Forestry Association and an enthusiastic Trail Rider.

FRANK WAUGH (*Drawing Trees*) is Professor of Horticulture at Amherst and "tops" in his profession of landscape architecture. Born in Wisconsin, he spent his early years in Kansas, "when the plains were plains." Specializing in art and landscape architecture, he taught in colleges in Oklahoma and Vermont before joining Amherst's staff in 1902. A gifted writer, his hobbies are photography and flute playing.

CHARLES ELLIOTT (*Feet in the Earth*), native Georgian and one of the group of younger foresters, has already had an interesting career in his own profession, and has found time as well to do considerable writing. His love of beauty and innate appreciation of the spiritual in nature do much to color his work, which often appears in the columns of this magazine.

NORMA R. GRAVES (*The Little Green Guards*), new to our columns, has traveled extensively, free-lancing for current national magazines. A native Oregonian and graduate of the University of Oregon, she is a grandniece of Peter Burnett, leader of the Pioneer Emigrant Train of 1843 and later first State governor of California.

THE COVER—"Chief Mountain"—Photograph by John Kabel.

MAKE YOURS A "V" HOME

AMERICA'S HOMES are enlisting!

To determine the extent in which the country's homes are participating in the total war offensive and making necessary air raid precautions, a house-to-house survey under OCD guidance has just been launched.

Local defense officials are now empowered to award a "V Home" certificate to any home which has made necessary air raid precautions and which asserts that it has participated in practical measures strengthening the war effort such as conservation, salvage, refusal to spread malicious rumors, and regular purchases of War Savings Stamps and Bonds. Designed as a window sticker for display purposes, the "V Home" certificate will be signed by the air raid warden or appropriate local defense official.

Simultaneously, protective measures for business establishments in strategic areas are being checked.

"The purpose of this program," Director James M. Landis declared, "is to make sure that all homes and all business establishments for which civilians are responsible in strategic areas have made the proper precautionary arrangements for an air raid, and that American homes everywhere are fully and actively enrolled in constructive war work. For nearly a year now, the Office of Civilian Defense and the various State and local defense councils have been instructing people in the proper methods of preparing themselves so that raids, when and if they do come, will cause a minimum of damage, distress, and confusion. It is now time to find out how well those lessons have been learned—how thoroughly they have been put into operation."

To qualify, a person must demonstrate that his home meets the essential protective requirements as to blackout, provision of a shelter room, and fire-fighting equipment as deemed necessary locally. The other requirements for the "V Home" certificate will be satisfied by the word of the householder that he is actually living up to them. Inspection of all property will be subject to the consent of the owner or occupant.

This Is a V Home!

We in this home are fighting. We know this war will be easy to lose and hard to win. We mean to win it. Therefore we solemnly pledge all our energies and all our resources to the fight for freedom and against fascism. We serve notice to all that we are personally carrying the fight to the enemy, in these ways:

I. This home follows the instructions of its air raid warden, in order to protect itself against attack by air.

II. This home conserves food, clothing, transportation, and health, in order to hasten an unceasing flow of war materials to our men at the front.

III. This home salvages essential materials, in order that they may be converted to immediate war uses.

IV. This home refuses to spread rumors designed to divide our nation.

V. This home buys War Savings Stamps and Bonds regularly.

We are doing these things because we know we must to Win This War.

MEMBERS OF THE AMERICAN FORESTRY ASSOCIATION!

EVERY member of your family old enough to walk is eligible to be a "Home Warden." Read what you must do to earn the right to secure and display this emblem. Show that YOUR family is pledged as a unit to cooperate in the winning of the War through the Victory Home Campaign. Help our boys OUT THERE protect our homes BACK HERE.

INDIAN

FIRE PUMPS

SPEED UP UNCLE SAM'S FIRE FIGHTING! The Army, Navy, Forest Service, Civilian Defense—all use **INDIAN FIRE PUMPS** to smash fires before they spread. Fire hazards are multiplied in war time and these **CLEAR WATER** extinguishers play an important part in protecting the resources of the Nation.

Vital Forest Products Must Be Preserved Against the Ravages of Fire—

The war has already called for two and one-half billion feet of lumber and contracts have been let for another billion feet. Wood is needed in immense volume for cargo and fighting ships, airplanes, cantonments, shipping crates and many other purposes.

Every citizen owes the country his best efforts in controlling forest fire waste. An **INDIAN FIRE PUMP** may be the means of saving essential timber. Large leak proof tank can be kept filled indefinitely without rust or corrosion. When needed sling on back and direct powerful 30 to 50 ft. stream into the blaze. As much as 300 ft. of grass fire has been extinguished with one tankful of water.

BE PREPARED!

The vigilance of our armed forces must be equalled by the fire fighting services of the nation. Just as the soldier must have the most effective weapons to meet the enemy, so must those responsible for protecting wooded areas have the best fire fighting tools. **INDIAN FIRE PUMPS** have been tried and proven in many a hard fought battle with fire. Their speed, portability and strong construction have won the favor of foresters from Maine to California. Stand guard with **INDIANS**—enemy sabotage and arson increase the normal fire hazards.

THESE **INDIANS** ARE ON THE WAR PATH!

While the Army guards the front line, civilians must ... the fire line. Be sure you have enough ***INDIAN FIRE PUMPS*** *to kill fires before they spread. Take the ... sive with these portable, clear water fire fighters.*

D. B. SMITH & CO. 405 MAIN ST. UTICA, N. Y.

PACIFIC COAST AGENTS:

Hercules Equipment & Rubber Co. 435 Brannan St., San Francisco, Cal.
Coreo-Conwhit Sales Co. 520 S.W. Pine St., Portland, Ore.
The Conwhit Co. Klamath Falls, Oregon
Mill and Mine Supply, Inc. 2700 4th Ave. S., Seattle, Wash.
Roy G. Davis Company 617 E. 3rd St., Los Angeles